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Designing with volition: Examining the antecedents and outcomes of consumers' perceived autonomy in co-production platforms

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Abstract

The propensity of organisations to involve customers in their activities has increased with the proliferation of co-production platforms. Consumers want to play an active role in producing goods/services and to feel autonomous. Self-determination theory (SDT) states that autonomy is linked to well-being and is an innate need to experience oneself as the initiator and regulator of one's actions. Notwithstanding the importance of this need, there is little understanding of how organisations can support customers' experience of autonomy in co-production platforms.

Using a mock co-production website where participants designed a t-shirt, a series of online experiments were conducted. It was found that providing action choices (vs option choices) in the activity, intrinsic (vs extrinsic) rationales to participate in the activity, and access to high (vs low) perspective-taking brand communities positively influences perceived autonomy. Further, intrinsic motivation and cognitive customer engagement mediate the relationship between perceived autonomy and desirable participation outcomes such as enjoyment, repeat participation intentions, willingness to pay and design quality.

This is a first-of-a-kind study that extends SDT by demonstrating the different types of choice, rationales, degree/source of perspective-taking and their interactions and impact on consumers' perceived autonomy. The findings also provide specific guidelines for organisations to consider on how to enhance consumers' perceived autonomy while designing their co-production platforms for sustained participation.

Declaration

This is to certify that

(i) The thesis comprises only my original work towards the PhD,

(ii) Due acknowledgement has been made in the text to all other materials used,

(iii) The thesis is less than 100,000 words in length, exclusive of tables, maps, bibliographies and appendices.

Date: *03/03/2018* Signature: *Triparna Gandhi*

Preface: Thesis-related Conference Presentations

Gandhi T., Bove, L. and Nagpal, A. (2017). 'Enhancing consumers' perceived autonomy in co-production platforms'. Paper presented at the Australian and New Zealand Academy of Marketing Conference, December 2017, Melbourne, Australia.

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To my husband and my parents

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List of Symbols and Abbreviations

α	Cronbach Alpha
ab	Indirect effect
AGFI	Adjusted Goodness-of-Fit Index
AMTURK	Amazon Mechanical Turk
ANOVA	Analysis of variance
AVE	Average variance extracted
ASV	Average shared variance
β	Standardised estimates
CFA	Confirmatory factor analysis
CFI	Comparative Fit Index
CI	Confidence interval
CR	CR
df	Degrees of freedom
EFA	Exploratory factor analysis
F	F-test statistic
HPT	High perspective-taking
KMO	Kaiser-Meyer-Olkin measure
LPT	Low perspective-taking

LLCI	Lower level confidence interval
M	Mean
MS	Mean square
MSV	Maximum shared variance
η_p^2	Partial Eta
p	p-value significance level
R^2	Squared correlation coefficient
RMSEA	Root mean-square error of approximation
SD	Standard deviation
SDT	Self Determination Theory
SE	Standard error
SEM	Structural equation modelling
SRMR	Standardised root mean-square residual
t	T-test statistic
ULCI	Upper level confidence interval
χ^2	Chi-square statistic

Introduction

The upsurge in the use of technological innovations and social media has provided organisations with several opportunities to encourage consumers to engage in co-producing goods and services with them (Heidenreich & Handrich, 2015). For instance, Spreadshirt.com customers can not only design and purchase their own t-shirts, but also sell their unique created products on the Spreadshirt.com marketplace. Another popular co-production platform is Zazzle.com, where you can create and buy your own cards, wall art, clothing and accessories. Co-production refers to "customers' active participation in the creation of the core offering itself within parameters defined by the focal organisation and independent of direct service employee involvement" (Haumann, Güntürkün, Schons & Wieseke, 2015, p. 19). With the rise in co-production, the marketplace has seen a change in the role of customers, from passive receivers to active co-producers of goods and services (Heidenreich, Wittkowski, Handrich & Falk, 2014). For instance, customers self-assemble new furniture, use online booking systems to check in to hotels and flights, and design their own shoes and clothes. When co-producing, customers invest their resources, such as time, effort, knowledge and skills (Etgar, 2008). The reason consumers invest their resources in co-production is that they believe they understand their own tastes and preferences better than the professional designers at firms (Moreau & Herd, 2010); thus, they want to play an active role in designing products (Franke, Schreier & Kaiser, 2010). This is shown in the increased preference for purchasing self-designed t-shirts, watches, scarves and mobile phone covers rather than those professionally designed by firms (Franke et al., 2010). Co-production is expressed as a win-win

scenario, whereby customers experience joy and satisfaction while participating, and organisations capitalise on client satisfaction and maximise profits (Chen, Tsou & Ching, 2011).

One of the main benefits of co-production for customers is the control they have over how they design products or services (O'Hern & Rindfleisch, 2010). This shift in control, from firms to clients, allows customers to feel autonomous while engaging in co-production activities (Etgar, 2008). Autonomy is defined as a "psychological need to experience behaviour as emanating from or endorsed by the self, rather than being pressured by external forces" (Reeve, 2012, p. 153). The need for autonomy has been found to be a primary motivator for consumers to undertake co-production activities (Dahl & Moreau, 2007; Etgar, 2008). Despite this, organisations face major planning challenges in relinquishing control to consumers (O'Hern & Rindfleisch, 2010). Hoyer, Chandy, Dorotic, Krafft and Singh (2010) assert that attempts to restrict customers' autonomy in co-production platforms reduce their willingness to contribute ideas. This leads us to ask the question: how can firms provide customers autonomy in their co-production activities? Using self-determination theory (SDT), I propose a conceptual framework whereby organisations can augment customers' perceptions of autonomy without relinquishing control.

SDT posits that the key to increasing perceptions of autonomy lies in the design of the social environment created for the individuals during the activity (Deci, Vallerand, Pelletier & Ryan, 1991). There are three ways in which the social environment can be designed to provide autonomy support: provision of choice, rationale, and perspective-taking (Deci & Ryan, 1987). The literature has found that these three support factors impact autonomy (see Su & Reeve, 2011). However, there is an important limitation in the manner in which past studies have studied this relationship. Past research mainly focused on whether support in the form of choice, rationale, and perspective-taking were provided (Deci, Eghrari, Patrick &

Leone, 1994; Baard, Deci & Ryan, 2004). For example, Deci et al. (1994) found a positive impact of choice, rationale and perspective-taking on individual's perception of whether these three support factors were provided and found that these perceptions in turn enhance intrinsic motivation. I propose that this is a limitation; one must go beyond merely understanding whether support was provided, and focus on understanding whether consumers felt autonomous or not. This is an important distinction between my research and previous studies; I propose that, in order to perceive autonomy, individuals need to experience an inner endorsement of actions, high psychological freedom and a sense that their actions are truly self-chosen (Reeve, Nix & Hamm, 2003). The importance of this is further illustrated by the fact that past research provides mixed evidence; some studies find that the support factors have a positive impact on perceived autonomy, others find that they do not enhance perceptions of autonomy (see Patall, Dent, Oyer & Wynn, 2013; Assor, Kaplan & Roth, 2002; Reeve & Jang, 2006). Given the contradictory findings in the literature, this study set out to understand whether different types of choice, rationale and perspective taking exist (support factors) and the impact of these different types of support factors on consumers' perceived autonomy.

In some instances, when the choices offered were not found meaningful (Reeve & Jang, 2006; Reeve et al., 2003), or did not allow for self-regulation (i.e., experiencing psychological freedom) (Williams, 1998), they did not have an impact on perceived autonomy. Thus, it is not the mere act of choosing that provides individuals with a sense of autonomy; the type of choice offered is an important influence on perceptions. Studies of autonomy support factors to date have only compared the presence vs absence of rationales for participation in an activity, with mixed findings as to influence on perceived autonomy (Patall et al., 2013; Reeve, Jang, Hardre & Omura, 2002). For example, Assor et al. (2002)

found that rationales that allow students to draw a link between their personal goals and the task at hand increase perceptions of autonomy. However, in some instances providing rationales to students in classrooms did not have a significant impact on students' perceived autonomy (Reeve & Jang, 2006; Patall et al., 2013). Thus, I argue that, instead of focusing on the mere presence or absence of a rationale, studies need to explore whether there are differences between the types of rationale.

While Reeve and Jang (2006) found that perspective-taking had a significant positive influence on students' perceived autonomy. Assor et al. (2002) discovered that teachers taking their students' perspectives did not have an influence on their perceptions of autonomy. To date, autonomy support research has studied the perspective-taker as physically present in the same environment as the support receiver. However, with the rise of technology, customers often turn to online support communities for support (Dessart, Veloutsou & Morgan-Thomas, 2015), and within these online brand communities different degrees and sources of perspective-taking exist (Gebauer, Füller & Pezzei, 2013). I therefore propose that it is important to understand the influence of different degrees and sources of perspective-taking on perceived autonomy in online communities.

Accordingly, I postulate that different types of choice, rationale and degrees/sources of perspective-taking, existing in a co-production platform, can have varying impacts on consumers' perceived autonomy. The types of choice I study are action vs option. Action choices are present when individuals are given the freedom to choose the work method, pace and effort (Thomas & Oldfather, 1997) while undertaking the design activity. Option choices are present when individuals are given a defined range of alternatives to select from (Reeve et al., 2003) in order to co-produce a design. I further segregate action choices to study the influence on perceived autonomy of choice in pace vs choice in method. Choice in effort was

not included in this study as pace and effort are highly correlated (Garbarino & Edell, 1997). Choice in pace is present when consumers determine the amount of time they want to spend (Williams, Wallace & Sung, 2016) on the co-production activity. Choice in method is present when consumers determine how to organise the co-production environment in which they are participating.

The types of rationales (i.e., reasons given by the organisation for participating in the activity) examined are intrinsic and extrinsic. Intrinsic rationales express the psychological benefits of participation in the activity (e.g., it is fun creating your ideal product). I study the influence of different types of intrinsic rationales, hedonic vs personal development, on perceived autonomy. Hedonic rationales convey that participation can be fun or exciting (Holbrook, 2006), while personal development rationales convey that participation can help with personal growth and achieving goals (Roberts, Hughes & Kertbo, 2013). I also study the influence of different types of extrinsic rationales, monetary vs recognition, on perceived autonomy. Recognition rationales offer ego gratification motives, such as reputation and fame (Hennig-Thurau, Gwinner, Walsh & Gremler, 2004), whereas monetary rationales offer immediate financial incentives (Zhao & Zhu, 2014).

Perspective-taking refers to being aware of and actively considering the consumers' interests, points of view and feelings (Deci et al., 1994). Degrees of perspective-taking are examined through high perspective-taking brand communities vs low perspective-taking brand communities. I also examine the source of perspective-taking through consumer-brand communities vs organisation-brand communities. Customer-brand communities are discussion forums where other customers (i.e., peers) primarily respond to any queries or concerns customers may have about the co-production platform, the activity, or the process of participation. Organisation-brand communities are discussion forums where organisation

representatives primarily reply to these queries or concerns. This dissertation, therefore, sets out to answer the research question:

What are the impacts of different types of choice, rationale and degrees/sources of perspective-taking on perceived autonomy?

Although co-production literature has identified autonomy as a psychological motivator or driver that encourages customers to participate in the production process (Etgar, 2008; Hoyer et al., 2010), it remains unknown whether enhanced perceptions of autonomy positively influence co-production outcomes. I argue that it is essential for the co-production literature to understand the influence of perceptions of autonomy on the key coproduction outcomes that determine the success of these platforms. The outcomes I study in this research are participation enjoyment, repeat participation intentions, willingness to pay and perceived design quality. This leads to the second research question:

Does enhanced perceived autonomy positively influence key co-production outcomes?

The main aim of this dissertation is to determine whether certain types of choice (action vs option and choice in pace vs choice in method) and rationale (personal development vs monetary and hedonic vs recognition) and different degrees and sources of perspective-taking brand communities (high vs low and customer vs organisation) enhance customers' perceived autonomy in co-production platforms. Further, it examines whether consumers' perceived autonomy (mediated via their intrinsic motivation and cognitive customer engagement) will positively influence key co-production outcomes such as customers' participation enjoyment, repeat participation intentions, willingness to pay and perceived design quality.

This thesis espouses a positivistic epistemological standpoint, which assumes that "a single, external world exists, that this social reality can be empirically measured by independent observers using objective methods, and that it can be explained and predicted through the identification of universal laws or law-like generalizations" (Brown, 1996, p. 247). The fundamental assumption informing this research is that reality exists outside of people's mind and this reality can be determined by substantiating predictions (Crotty, 1998) and validating them through empirical methods (Easterby-Smith, Thorpe & Holman, 1996). The aim of this thesis is to identify causal relationships leading to consumers' perceptions of autonomy within co-production platforms. Using a mix of an online panel and a student sample, I conducted a series of experiments to test the causal relationships theorised in the dissertation.

This research makes contributions to both knowledge and managerial practice. The contribution of this research to theory is threefold. First, it expands the co-production literature, as it provides empirical evidence of how to enhance perceptions of autonomy within co-production platforms and how these enhanced perceptions of autonomy can improve the success of co-production platforms. Second, this research extends SDT theory by providing empirical evidence that perceived autonomy can be enhanced within co-production platform when consumers are given action choices (vs option choices), more specifically choice in pace (vs method) within the activity. In addition, when consumers are provided with intrinsic (vs extrinsic) rationales, such as personal development or hedonic rationales, it enhances consumers' perceived autonomy. Moreover, having access to high (vs low) perspective-taking brand communities and consumer- (vs organisation-) brand communities further enhances consumers' perceived autonomy. It further contributes to SDT by demonstrating that the influence of perceived autonomy on co-production outcomes (such

as, participation enjoyment, repeat participation intention, willingness to pay and perceived design quality) is better explained by cognitive customer engagement than by intrinsic motivation. Third, this research contributes to the customer engagement literature by providing empirical evidence that perceived autonomy is an antecedent of cognitive customer engagement within co-production platforms. More importantly, it demonstrates that cognitive engagement mediates the influence between autonomy and key co-production outcomes. Practically, this dissertation offers organisations strategic guidelines on how best to design their online platforms to sustain participation and enhance participation enjoyment.

There are five chapters in this thesis. Chapter 1 provides a review of the literature on co-production and autonomy. Chapter 2 consists of the empirical studies in which I examine the influence of types of choice, rationale and degree of perspective on consumers' perceived autonomy in co-production platforms, as well as the subsequent outcomes of perceived autonomy. In Chapter 3, the key findings of each study are summarised. Chapter 4 highlights the broader contribution to theory and insights for practice, as well as discussing the limitations of the study and proposing future research directions. The final section, Chapter 5, provides a conclusion to the research study.

Chapter 1 – Literature Review

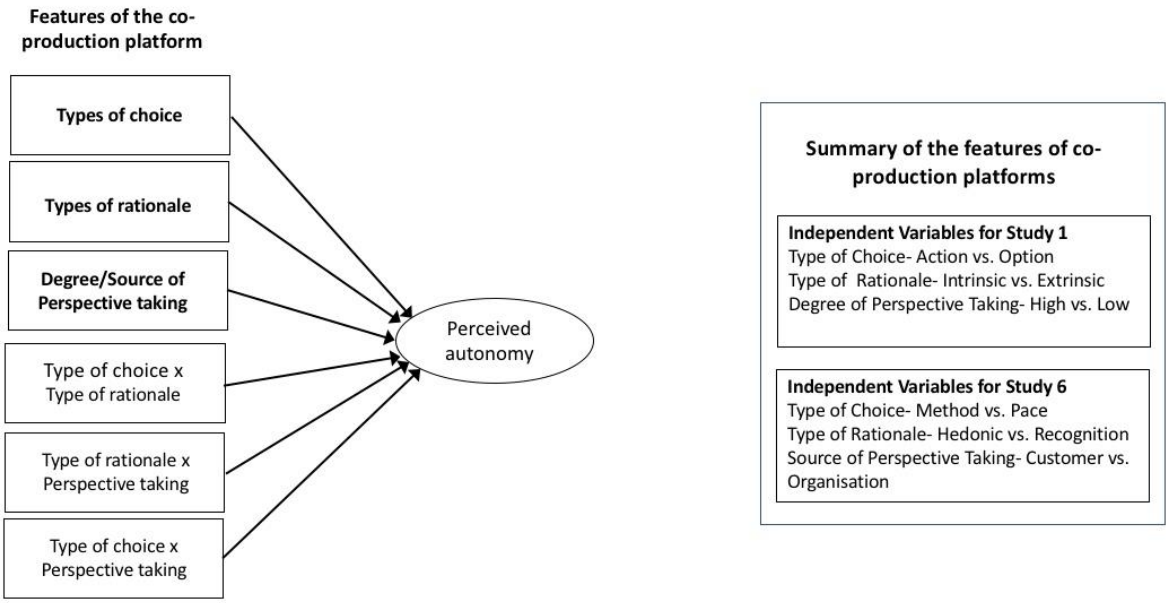
This chapter provides a review of the literature of co-production, autonomy and other constructs used in the conceptual model. First, I begin with defining the term co-production, and differentiate this from related concepts such as co-creation. I then provide an overview of the co-production literature and discuss the importance of facilitating consumer perceptions of autonomy within co-production platforms.

Next, I provide a literature review for the term autonomy in philosophy and psychology. I then provide a review of autonomy within self-determination theory and found that there are three ways in which the environment can be designed to provide autonomy support: provision of choice, rationale, and perspective-taking (Deci & Ryan, 1987). However, some studies find that these support factors have a positive impact on perceived autonomy, while some others find that they do not enhance perceptions of autonomy (see Patall, Dent, Oyer & Wynn, 2013; Assor, Kaplan & Roth, 2002; Reeve & Jang, 2006). Given the contradictory findings in the literature, this thesis set out to answer the first research question whether different types of choice, rationale and perspective taking exist (support factors) and the impact of these different types of support factors on consumers' perceived autonomy. Therefore, I propose an overall conceptual framework guide (see Figure 1) that is unpacked through a series of experiments within this dissertation.

In *Study 1*, I studied at the influence of action vs option choice, intrinsic vs extrinsic rationale and HPT vs LPT brand communities and their effects on perceived autonomy. In studies 2, 3, 4 and 5, I looked at each of these support factors in isolation and tested whether there were other types of choices (*Study 2*- method vs choice in pace), rationales (*Study 3* - hedonic vs personal development) (*Study 4*- recognition vs monetary) and source of

perspective-taking (*Study 5*- customer vs organisation) can influence autonomy. In Study 6, I aimed to replicate the findings for the main effects found in studies 2–5 and test whether there are any interaction effects between the IVs tested individually in the preceding studies. Therefore, I look at the influence of choice in method vs choice in pace, hedonic vs recognition rationale and customer vs organisation brand communities and their interactions on perceived autonomy. Figure 1 presents an overall conceptual model guide that is set out to answer the first research question in the thesis.

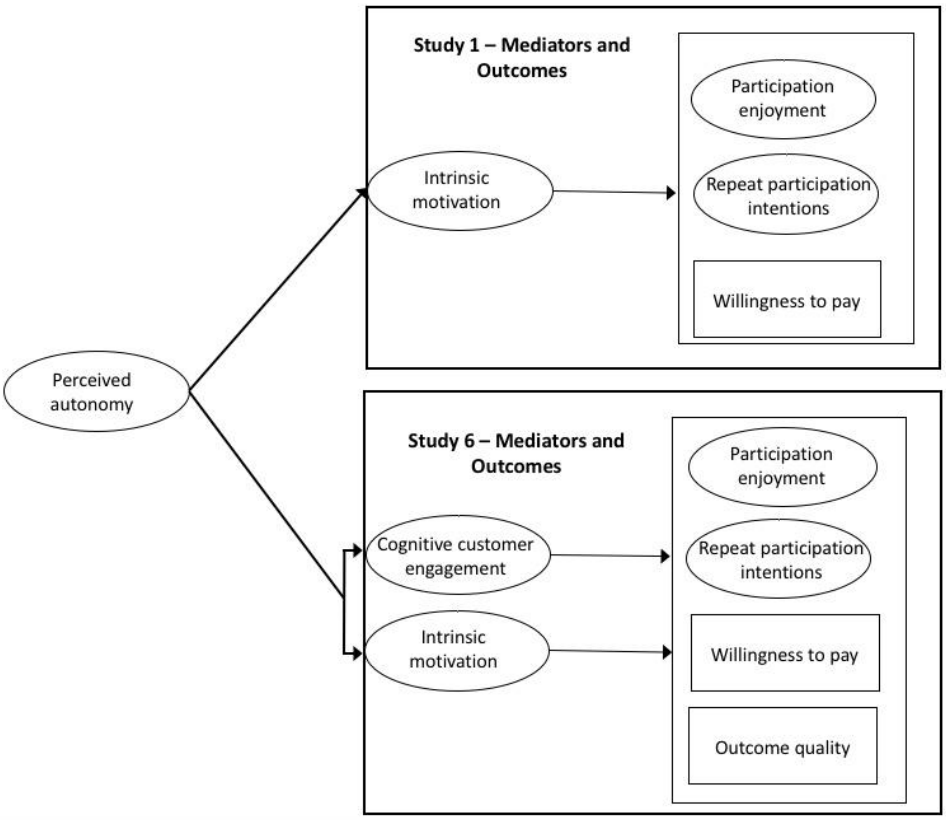
Figure 1. Overall conceptual model- Antecedents of perceived autonomy



I set out second part of the conceptual framework to understand the second research question -*does enhanced perceived autonomy positively influence key co-production outcomes?* To answer this question, I study the outcomes of autonomy to understand how perceived autonomy influence co-production outcomes. In study 1, I included co-production outcomes such as participation enjoyment, repeat participation intentions and willingness to

pay mediated via intrinsic motivation. In Study 6, I included an additional co-production outcome of perceived design quality and I also tested an additional mediator to intrinsic motivation – cognitive customer engagement. Figure 2 provides an overview of the various mediators and co-production outcomes studied in the thesis.

Figure 2. Overall Conceptual Model - Mediators and Co-production Outcomes



1.1 Co-production

1.1.1 Terminology to Denote Co-production

Terms such as co-production, co-creation and customer participation have often been used interchangeably (Dong & Sivakumar, 2017), and there is an ongoing discussion in the literature about the disparities between these terms and the need to differentiate between them (Grönroos & Voima, 2013; Dong & Sivakumar, 2017). While some researchers (Dong &

Sivakumar, 2017; Ranjan & Read, 2016) have attempted to provide clarification, the inconsistent use of terms is prevalent in the literature. I provide a review of the definitions of the three most commonly used terms in the literature and the distinctions between them.

Co-production

Co-production is a shift from the traditional transactional view of production (Etgar, 2008). Traditionally, firms would produce goods and services that consumers could purchase. However, in co-production consumers play an active role in performing some of the traditional functions of the firm, while the firm provides a more facilitative and supportive role (Haumann et al., 2015), such as providing tool kits or online platforms for co-design (Troye & Supphellen, 2012). Co-production refers to instances in which customers collaborate with firms to produce a service (Dong & Sivakumar, 2017). Co-production has been defined as "customers' active participation in the creation of the core offering itself within parameters defined by the focal organisation and independent of direct service employee involvement" (Haumann et al., 2015, p. 19).

Value creation, co-creation and value-in-use

Service-dominant logic posits that value cannot be created solely by the firm and that customers are always co-creators of value (Vargo & Lusch, 2004). Vargo and Lusch (2004) assert that, while value can be derived by interacting with the firm and its offerings, it can also arise through the process of consumption, which can be independent of the firm's intervention or exchange. It is derived by the consumer based on context and processes, including location and time (Gummerus & Pihlström, 2011). Customers co-create value

through integrating resources they obtain through a range of activities and interactions (Baron & Harris, 2008). Thus, customers play a role in the provision of the service and the realisation of the benefit (Sweeney, Danaher & McColl-Kennedy, 2015).

Co-production has been described as only one component of value co-creation (Sweeney et al., 2015). Vargo and Lusch (2016) describe co-production as customers' involvement in the production of the product/service offerings, while value creation has a much broader scope. Etgar (2008) distinguishes between co-production and co-creation. Co-creation of value often occurs at the consumption/usage stage, whereas co-production occurs during the production process that precedes the consumption stage. The production process is defined as "a chain of sequential bundles of operational activities linked in a network chain with each set of activities leading to the next" (Etgar, 2008, p. 98). Etgar (2008) further elaborates that the various operational activities, such as resource aggregating, designing, and processing activities, that lead to construction of outputs that are consumed/used later. Etgar (2008) argues that co-production occurs when consumers participate in performing various activities in one or more stages of the network chain, while co-creation of value occurs at the usage/consumption stage.

Customer participation

Customer participation refers to "the extent to which customers are involved in service production and delivery by contributing effort, knowledge, information, and other resources" (Dong & Sivakumar, 2017, p. 1). Customer participation overlaps both co-production and value co-creation, and includes both passive participation (e.g., just being present at the

dentist) and active, labour-intensive participation (e.g., designing a t-shirt) (Dong & Sivakumar, 2017).

Recognising that there is a lack of consensus in the literature in regard to the terminology of customer participation, I have opted to use 'co-production' – the main reason being that I am focusing on the customers' active involvement in the firm's production process.

1.1.2 Antecedents and Outcomes of Co-production

The co-production literature can be broadly categorised into two research themes: antecedents and outcomes of co-production. The first focuses on why consumers engage in co-production activities. Bateson (1985) studied consumer preferences for self-service over traditional delivery systems and found that consumers place a high degree of importance on their perceived control of the situation. Dabholkar and Bagozzi (2002) studied the influence of situational factors (such as social anxiety and perceived waiting time) and customer traits (such as self-efficacy and novelty-seeking) on attitude towards using self-service technology. This study found that higher social anxiety and greater perceived waiting time strengthened the relationship between ease of use and attitude toward using self-service technology, while higher self-efficacy and greater inherent novelty seeking weakened the relationship between ease of use and attitude toward using self-service technology. Meuter, Bitner, Ostrom and Brown (2005) examined factors that influence consumers' decisions to use self-service technologies. Their study showed that consumer readiness variables (such as ability, role clarity and motivation) are key mediators between individual differences and innovation characteristics and the likelihood of trial.

The second theme focuses on the outcomes of co-production. Both, the psychological consequences of participating in co-production activities, and the economic benefits for firms engaging in co-production activities have been discussed in the past literature. Studies mainly compare consumers' evaluations of products/services across two conditions: one in which customers actively participate in a co-production activity by completing a product kit (co-production), and a second in which consumers do not play a part in the production process, but are assigned a finished product/service (firm production). These studies find that involving customers in the production process enhances their evaluation of the co-produced product (Troye & Supphellen, 2012; Atakan, Bagozzi & Yoon, 2014). Atakan et al. (2014) found that involving a customer in a co-production process positively influences identification, which enhances affective commitment, which, in turn, increases the evaluation of the self-designed product. Moreover, Bendapudi and Leone (2003) found that, when customers participate in the production process, it changes their attitudes toward the firm offering and enhances satisfaction with the firm.

Early research in co-production examined the economic benefits of productivity gains, using customers as substitutes for employee labour, or acting as "partial employees" in the production process (Mills & Morris, 1986; Mills, Chase & Margulies, 1983). It was found that not only do firms benefit from utilising consumers as valuable resources, but self-designed products also generate a significantly higher willingness to pay than firm-designed products, mediated by feelings of accomplishment (Franke et al., 2010; Franke & Piller, 2004).

1.1.3 Co-production and Autonomy

A growing number of consumers are seeking increased autonomy in the participation process (OHern & Rindfleisch, 2010; Dahl & Moreau, 2007). Within the co-production literature, autonomy has commonly been identified as a motivator or driver that encourages customers to participate in the production process (Etgar, 2008; Hoyer et al., 2010). Etgar (2008) conceptualised a model of the consumer co-production process, and stated that autonomy is one of the psychological motivations for undertaking participative activities with firms. Similarly, Dahl and Moreau (2007) examined consumers' motivations for undertaking creative tasks, and found that one of the most frequently-discussed motivations is autonomy. They conducted two experimental studies to understand the importance of instructional guidance (constraints) on target outcomes while participating in creative tasks, and found that providing too many instructions in the kits (e.g., model airplanes, needlepoint), although increasing feelings of competence, reduces the customers' sense of autonomy (Dahl & Moreau, 2007). Although studies have understood autonomy as motivation for participation, the co-production literature still lacks an understanding of how autonomy can be provided and supported in a co-production platform.

1.1.4 Co-production and Equity

One of the underlying elements of co-production is equity (Ranjan & Read, 2016). Equity refers to an "organisation's willingness to share control in favour of consumer empowerment and the consumer's desire to contribute to their role in co-production activities" (Ranjan & Read, 2016, p. 292). Equity is displayed in the organisation's willingness to provide a facilitative environment that allows consumers to feel empowered (Payne, Storbacka, Frow

& Knox, 2009).

Although some firms have recognised the benefits of adopting co-production activities, many are reluctant to enhance customer autonomy, due to concerns about losing control over their brands, ceding managerial power, or losing proprietary information (Hoyer et al., 2010). For instance, Intuit CEO Scott Cook revealed that upper-level managers at his firm resisted co-production because they said it challenged the typical role of management. Intuit wanted to maintain control over customers' experience for quality assurance (Cook, 2008). Attempts to restrict customers' autonomy in co-production platforms decreases customers' willingness to contribute ideas, and may even increase the risk reactance toward the company (Hoyer et al., 2010). Therefore, I argue that it is imperative for organisations to provide a facilitative co-production environment that can enhance consumers' perceptions of autonomy, without having to relinquish control. My research is positioned in this gap in understanding of how firms can share control in order to enhance customers' perceptions of autonomy. To fill this gap, I provide a framework to understand the way organisations can increase customers' perceptions of autonomy without relinquishing control to customers.

1.2 Autonomy

The etymological origin of the term 'autonomy' is Ancient Greek: *auto-* ('self') and *nomos* ('rule', 'governance' or 'law') (Bellezza, Gino & Keinan, 2014). The notion of autonomy was initially used to describe self-governance in Greek city-states. However, the concept of 'autonomy' has received considerable attention in many disciplines. In this section, I will outline conceptualisations of autonomy that can be found in philosophy (Ricoeur, 1966; Pfander, 1967; Hill, 1989) and social psychology (Deci & Ryan, 1985a; Deci & Ryan, 1987; Ryan & Deci, 2000b).

1.2.1 Autonomy in Philosophy

The most prominent work on autonomy is Kant's work about moral autonomy. Hill (1989) describes freedom as not having barriers to actions that are external to our free will, although it is necessary that we utilise a moral law to guide our actions. This self-imposition of moral law is referred to as autonomy. Moral law is "marked by an individual's inner necessity when their will is guided by a moral maxim relevant to the situation at hand" (Dan-Cohen, 1992, p. 233). Moreover, this moral law must not be influenced by one's sense or desire; it must be universal (Christman, 2008). Dan-Cohen (1992) highlights that Kant analogises the relationship between one's will and the moral law to the relationship of the laws of nature to physical objects. For instance, he says to not to follow the laws of morality, for the will, is as impossible as resisting gravity for an apple. Kant's view espouses a sense of inevitability, which is a vital part of our moral experience (Dan-Cohen, 1992). Christman (2008) differentiates between Kant's view of moral autonomy and personal autonomy. Moral autonomy refers to imposing the moral law on oneself, while personal autonomy is a trait individuals can exhibit and it is not limited to questions of moral obligation (Dan-Cohen, 1992). There are other accounts of autonomy in philosophy. Feinberg (1989), for example, identified four meanings of autonomy: first, the capacity to govern oneself; second, a personal ideal; third, the actual condition of self-government; and, finally, a set of rights expressive of one's independence over oneself. Christman (2008), however, points out that a person's ability to act, choose, or reflect on factors that are authentic to one self is central to these meanings.

Similarly, Arneson (1994) and Dworkin (1988) assert that the essence of the term autonomy is self-rule, and the idea of self-rule comprises two components, the capacity to

rule oneself, and the freedom of one's thought and choice. Thus, autonomy concerns itself with one's ability to rule oneself, since that will ensure one is free from external manipulation (Christman, 2008). For people to govern themselves, they should be in a position to act on their desires (Christman, 2008).

Phenomenologists have made a distinction between autonomous behaviours and non-self-regulated behaviours (Ryan, Kuhl & Deci, 1997). For instance, Pfander (1967) distinguished 'self-determined' acts, which are determined by one's own will, from other forms of motivation. Pfander (1967) defines self-determined acts as acts of the ego-centre itself, not caused by any external agent. He elaborated that an external input (such as social pressure) or the inner will can supply the motivation for self-determined acts, as long as the self or the 'egocentre' endorses these actions. Ricoeur (1966) provided an account similar to Pfander's, with self-determined acts defined as those fully endorsed by the self and in accordance with abiding values and interest. Thus, autonomy not only reflects a person's independent initiatives or activities, but also those initiatives undertaken due to external influences, if they are endorsed wholeheartedly (Ricoeur, 1966). This line of thinking underlies Heider (1958) and DeCharmes (1968) work on locus of causality, from which SDT evolved.

1.2.2 Autonomy in Psychology

Early cognitive theories of motivation, drawn mainly from Gestalt psychology, explain motivation via people's intentions to achieve positively-valanced outcomes and avoid negatively-valanced outcomes (Heider, 1960; Lewin, 1951). These theories adopted the term *intention* (a planned action) as their central construct (Reeve et al., 2003). Intention refers to a determination to engage in a particular behaviour (Atkinson, 1964). Moving forward, SDT

researchers (Deci & Ryan, 1985c; Deci & Ryan, 1987) found that some behaviours are initiated and regulated autonomously, whilst others are controlled. To differentiate controlled behaviours (determined by guilt, rewards, or other forces) from autonomous behaviours, Deci (1981) adopted the term self-determination. Thus, Deci and Ryan (1987) highlight that SDT makes a distinction between behaviours that are autonomously initiated and regulated by the self, and behaviours that are initiated and regulated by interpersonal and intrapersonal forces.

SDT is a theory of human motivation, which posits that humans are active organisms with tendencies toward overcoming challenges, growing, and incorporating new experiences into their sense of self (Deci & Ryan, 2002). SDT postulates that these developmental propensities do not take place automatically; instead, they require ongoing social support (Deci & Ryan, 1985c). The social environments in which people find themselves can either support or frustrate these natural tendencies toward psychological growth and active engagement (Deci & Ryan, 1985c). Thus, the basis of SDT is the tension (dialectic) between the active organism and the social environment that predicts the experience, behaviour and development of humans (Deci & Ryan, 2002). SDT assumes that the need for autonomy is universal (Deci & Ryan, 1985c), and that the experience of autonomy, while undertaking any activity, is an extremely desirable state (DeCharmes, 1968; Deci & Ryan, 1985c).

Autonomy is a characteristic of actions. It refers to an individual's need to be an initiator and regulator of his/her own actions (Ryan & Deci, 2006). Thus, the etymological meaning of autonomy, 'self-regulation', is retained with SDT. SDT states that a person is autonomous when "their behaviour is willingly enacted, and when they fully endorse the actions in which they are engaged" (Chirkov, Ryan, Kim & Kaplan, 2003, p. 98). Therefore, people are most autonomous when their actions are aligned with their authentic interests or integrated values and desires (Deci & Ryan, 1985b; Deci & Ryan, 2000). SDT states that the

opposite of autonomy is "heteronomy", whereby individuals experience their actions as being controlled by external forces or feel that they are being compelled to behave in ways that are against their values and interests (Ryan & Deci, 2006) – for instance, when people follow social norms they do not identify with or are pressured to do something they do not fully believe in, they experience a lack of autonomy (Chirkov, Ryan & Sheldon, 2011).

1.2.3 Autonomy and Well-Being

SDT proposes that optimal psychological health and well-being emerge when the three basic psychological needs are satisfied, namely, autonomy, competence and relatedness (Chirkov et al., 2003). SDT is supported by its convergence with the analytical and philosophical analyses of autonomy as an intrinsic value for the well-being of individuals (Dworkin, 1988; Mill, 1869). SDT posits that human autonomy, within this theoretical framework, is "a universal condition for people to grow, flourish, and be happy" (Chirkov et al., 2011, p. 23).

Subjective well-being refers to the way in which people evaluate their lives. It entails how one views the meaning of their life, their purpose, their experiences of emotions, and their potential for growth (Diener, 2000). Subjective well-being is a scientific concept that contains affective and cognitive components (La Toya, 2012). The affective components refer to a person's moods and emotions, like joy and happiness, and the cognitive components refer to a person's evaluation of their life satisfaction, such as one's global judgments of their life (Diener, 2000; Frey & Stutzer, 2000).

SDT states that autonomy plays a central role in individuals thriving, living healthy and happy lives. Autonomy allows individuals to grow and to choose their own desired ways of living, which lead to both happiness and vitality (Chirkov et al., 2011). Research has shown that contexts that are autonomy-supportive enhance the well-being of individuals (Ryan &

Deci, 2000c; Reis, Sheldon, Gable, Roscoe & Ryan, 2000). For instance, Ryan, Bernstein and Brown (2010) studied the daily vitality levels and moods of employees across their work week. They found that during weekends and nonworking times there was a rise in vitality and positive affect. This was mainly because most employees did not experience autonomy in their work. The study provided empirical evidence that fluctuations in basic psychological needs, such as autonomy, can substantively account for relative happiness and health. Similarly, Baard et al. (2004) found that employees of a banking firm who felt autonomy at work displayed better psychological wellness and better performance. Moreover, Deci and Ryan (1995) found that when people behave more autonomously, they have a secure sense of self, leading them to have less narcissistic goals and to display better mental health.

1.2.4 Perceived Autonomy

Perceived autonomy has been conceptualised as a three-dimensional construct, which includes experiential qualities of internal locus, volition and perceived choice (Reeve et al., 2003). Each of these three dimensions contributes to experiencing self-initiation and self-regulation of behaviour and can be understood using the online business of Threadless.com. On the Threadless website individuals create t-shirt art work and submit it for voting. As many as 300 submissions are received per day and a large base of fans vote on the designs they like most (Burkitt, 2010). Threadless selects the most popular designs and, after screening them for copyright violations, it sells these t-shirts on the company's website, giving the designer cash prizes and a portion of sales as royalty (Burkitt, 2010).

Internal locus (personal causation) pertains to the perception that actions originate from oneself (Reeve & Jang, 2006), while external locus (Reeve et al., 2003) refers to the perception that actions result from environmental forces (DeCharmes, 1968). *Intention*

denotes a determination to participate in a particular action (Atkinson, 1964), and DeCharms (1987) posited that having an intention suggests personal causation. However, SDT research clarified that intentions originating from the inner self (internal locus) produce more well-being, compared to intentions influenced or coerced by external forces (external locus) (Reeve et al., 2003). For example, individuals participate in the Threadless t-shirt design contest because they are passionate about designing and want to discover themselves through their art (internal locus), or because Threadless provides them a monetary incentive for winning the contest (external locus). Internal locus has gained central status in the SDT studies and is frequently equated with the term 'autonomy'. For example, Ryan and Grolnick (1986) highlight how a person who perceives his/her actions to originate from within is considered autonomous.

Volition refers to how free or forced a person feels in undertaking an action (Reeve et al., 2003). Volition is high when the actions are fully endorsed by the inner self, and the person experiences high psychological freedom (Deci, 1981) and little or no pressure (Plant & Ryan, 1985). *Psychological freedom* signifies the subjective experience individuals feel when their behaviour is coordinated with their personal interests, needs and preferences (Deci, 1981). Thus, for people's actions to be entirely self-regulated, they must experience volition, "a sense of unpressured willingness to engage in the activity" (Deci, Ryan & Williams, 1996, p. 165).

The opposite of volition is feeling pressured by environmental forces or by one's own ego-involvement (Reeve & Jang, 2006). When intentional behaviour is reflective of environmental pressures (e.g., guilt, rewards, deadlines, etc.), and not endorsed by the self, the individual is psychologically forced into an action (Reeve et al., 2003). For example, individuals who submit to a Threadless t-shirt design contest could be participating because they are personally interested in designing (self-regulated), or they want to win the contest

for the royalties the winner receives when the t-shirts are sold (externally regulated). Deci et al. (1996) highlight that, when people self-regulate their behaviour, they are fully engaged in the activity, whereas when people externally regulate their behaviour, they experience low engagement.

Volition can also be restricted when people create *internal pressures* to force themselves into an action. This internal pressure or tension is referred to as *ego-involvement*, which is also a contrast to volition. Ego-involvement is described as a condition in which a person's self-esteem hinges on attaining a specific performance outcome (Deci & Ryan, 1987). Ego-involvement is a means-end orientation, whereby individuals do not conduct an activity for the task itself; instead, they create internal pressures to undertake an activity to demonstrate that they can achieve a better outcome than others (Ryan, Koestner & Deci, 1991). For instance, consider the behaviour of Tim, a graphic designer by profession, who enters the Threadless t-shirt design contest to prove his self-worth. Although the intention to participate is his own, and not imposed by external forces, Tim himself creates an inner pressure to prove his self-worth. Such internal pressures are found to operate in a manner similar to external controls in undermining the sense of freedom during the activity (Ryan, 1982; Plant & Ryan, 1985).

The last dimension of autonomy is perceived choice. *Perceived choice* arises when an individual experiences flexibility in decision-making (Reeve et al., 2003), namely whenever an individual decides between options provided by external forces (Reeve et al., 2003). For instance, consider the selection process of Threadless, where the organisation gives customers an opportunity to select the best design. Such an environment that provides individuals with "options about what to do, how to do it and whether or not to do it" (Reeve & Jang, 2006, p. 209) will increase their experience of perceived choice.

The need for perceived choice is so powerful that, even when individuals are choosing between undesirable outcomes (Zimbardo, Weisenberg, Firestone & Levy, 1965), or when the actual choice is illusory (Langer, 1975), it still leads to positive results. For instance, Zimbardo et al. (1965) conducted a study in which individuals were offered choices between unpleasant activities, such as providing electric shocks to themselves or eating grasshoppers. The study demonstrated that, when subjects felt they had a choice between the unpleasant activities, they perceived them to be less unpleasant, because they felt they had chosen to participate in those behaviours. Perceived choice gives rise to pleasant feelings because it causes people to bolster subjective evaluations of their decisions, which results in greater consistency between their behaviours and attitudes, leading to increased psychological well-being (Brehm, 1966; Festinger, 1962). Moreover, Langer (1975) demonstrated that perceived choice has powerful effects on motivation, even when the actual choices provided are illusory. Her research showed that giving participants a chance to choose lottery ticket numbers increased their belief that they would win. She found that exercising choice increases confidence and risk-taking, even though the outcomes are determined by chance and not based on the choices the individual makes. Perceived choice is also found to enhance an individual's life satisfaction and health status, whereas the absence of perceived choice leads to feelings of helplessness and hopelessness (Lefcourt, 1973; Rotter, 1966; Langer, 1975).

1.3 Autonomy Support

Autonomy support refers to the climate or environment created by the significant other to enhance the individual's experience of autonomy (Reeve et al., 2003). In a co-production context, the significant other (autonomy support provider) is the organisation, while the individual (autonomy support receiver) is the customer undertaking the co-production

activity, and the environment is the co-production platform. It is essential to point out that autonomy support does not refer to the characteristic of the co-production task itself, but to the design of the platform and the climate the organisation creates for the consumers during the production process. Thus, the co-production process is considered to support autonomy when the organisation offers customers choices, provides meaningful rationales for engaging in the activity, and acknowledges customers' feelings and perspectives (Deci et al., 1994). In contrast, a co-production process is considered autonomy-controlling when the organisation coerces consumers with threats or promises, deadlines and rewards, exerts pressure, and enforces evaluation and surveillance (Knee & Zuckerman, 1996; Deci & Ryan, 1987).

I gathered studies that applied the SDT framework in the work, education, health, and medicine domains to assess what other factors supported perceptions of autonomy. Table 1 provides a review of these studies. I note that most studies tend to adopt the support factors provided by Deci et al. (1994) – choice provision, rationale provision, and perspective-taking (see Table 1). Other support factors include encouraging self-initiation and minimising pressure; however, these are already embedded in the context of co-production. I assume that most co-production activities intrinsically promote 'self-initiation' because they are voluntary; consumers themselves decide whether to engage in a co-production activity. Further, I assume the support factor, 'minimising controls and pressures', is already embedded in the three main support factors of choice, rationale, and perspective-taking. Support factors can be provided in either an autonomous manner or a controlled manner. For instance, organisations can provide customers with choices/rationales that subtly pressure them to make a forced decision in the co-production activity, or offer choices/rationales that allow them to make decisions that are endorsed by their inner will.

The review of studies in Table 1 provides evidence that when individuals' perceptions of autonomy support satisfy their need for autonomy, these individuals experience greater psychological well-being. Within organisational settings, when employees' autonomy is supported by their managers at work, it influences their emotions and behaviours within the workspace. For instance, perceptions of autonomy support influence enhanced well-being (Deci et al., 2001), greater engagement at work (Deci et al., 2001), enhanced performance at work (Baard et al., 2004), enhanced job involvement and increased organisation citizenship behaviours (Liu & Fu, 2011). Similar cause-and-effect benefits have been found in educational settings when students' autonomy is supported by their teachers; this influences their emotions, cognitions and behaviours in school. For instance, students experience greater engagement (Assor et al., 2002), enhanced competence (Black & Deci, 2000), enhanced intrinsic motivation (Reeve et al., 2003), enhanced well-being and higher academic achievement (Sheldon & Krieger, 2007) when they perceived autonomy support in classrooms. In health and medicine, studies find that, when physicians support their patients' autonomy, those patients are more likely to change their current patterns of behaviours to better manage health. For instance, autonomy support led to cessation of smoking (Williams, Gagné, Ryan & Deci, 2002), better management of diabetes (Williams, Freedman & Deci, 1998), increased attendance at gym (Chatzisarantis, Hagger, Kamarova & Kawabata, 2012a), enhanced attendance at weight loss programs (Williams, Grow, Freedman, Ryan & Deci, 1996), and enhanced physical activity (Chatzisarantis, Hagger & Smith, 2007). From these studies, it can be concluded that people benefit when others support their autonomy within a given environment, and these benefits are widespread and contribute to their physical and mental health in all aspects of their lives.

Table 1. Review of papers studying autonomy support

Paper	Choice	Rationale	Perspective-taking	Other support factors	Mediators	Outcomes
Not domain specific						
(Deci et al., 1994)	✓	✓	✓	—	Experience of autonomy	***Emotional*** Positive feelings toward an initially uninteresting activity ***Behavioural*** Greater behavioural engagement in an initially uninteresting activity
Workplace						
(Gagné, Koestner & Zuckerman, 2000)	✓	✓	✓	—	Perceptions of autonomy support	***Behavioural*** Increased acceptance of change in a work organisation
(Deci et al., 2001)	✓	✗	✓	Encourage self-initiation	Perceptions of autonomy support → Need for autonomy satisfied	***Emotional*** Enhanced emotional engagement at work Enhanced well-being ***Behavioural*** Enhanced behavioural engagement at work
(Baard et al., 2004)	✓	✓	✓	Encourage self-initiation	Perceptions of autonomy support → Need for autonomy satisfied	***Emotional*** Greater well-being ***Behavioural*** Enhanced behavioural engagement at work Enhanced performance at work
(Liu & Fu, 2011)	✓	✗	✓	Opportunities for self-initiation Minimise use of pressures & demands	Perceptions of autonomy support → Personal learning in teams	***Behavioural*** Enhanced organisational citizenship behaviours Enhanced job involvement

Education						
(Williams, Saizow, Ross & Deci, 1997)	✓	✗	✓	Encourage proactive participation in learning activities	Perceptions of autonomy support → Perceived competence and interest	***Behavioural*** Helped students make career choices
(Black & Deci, 2000)	✓	✗	✓	Minimise the use of pressures and demands	—	***Cognitive*** Perceived competence ***Emotional*** Interest/enjoyment Decreases in anxiety over the semester
(Reeve et al., 2003)	✓	✗	✗	—	Perceived autonomy	***Behavioural*** Intrinsic motivation
(Assor et al., 2002)	✓	✓	✓	—	Perceived autonomy	***Cognitive*** Cognitive engagement ***Emotional*** Positive feelings regarding schoolwork Negative feelings regarding schoolwork ***Behavioural*** Behavioural engagement
(Sheldon & Krieger, 2007)	✓	✓	✓	—	Perceptions of autonomy support → Need for autonomy satisfied	***Emotional*** Better well-being ***Behavioural*** Higher grade point average Greater self-determined career motivation for first job Better bar exam results
(Patall et al., 2013)	✓	✓	✓	—	Autonomy need satisfaction	***Cognitive*** Course value

Health						
(Williams et al., 1996)	✓	✓	✓	—	Intrinsic motivation	***Behavioural*** Attended weight loss program more regularly Lost more weight, greater maintained weight loss
(Williams et al., 1998)	✓	✗	✓	—	Perceptions of autonomy support	***Behavioural*** Improved glucose control of diabetic patients over a 12-month period
(Williams et al., 2002)	✓	✗	✓	Minimise controls	Perceptions of autonomy support	***Behavioural*** Cessation of smoking
(Williams, McGregor, King, Nelson & Glasgow, 2005)	✓	✗	✓	Support patients' initiatives Minimise pressure and control	Perceptions of autonomy support	***Cognitive*** Perceived competence ***Emotional*** Reduced depressive symptoms Increased patient satisfaction ***Behavioural*** Better glycaemic control
(Chatzisarantis et al., 2007)	✓	✓	✓	Minimise pressure	Perceptions of autonomy support	***Behavioural*** Intentions to participate in physical activity
(Chatzisarantis & Hagger, 2009)	✓	✓	✓	—	Perceptions of autonomy support → Enhanced intentions to exercise during leisure time	***Behavioural*** Increased participation in leisure-time physical activities
(Chatzisarantis et al., 2012a)	✓	✓	✓	—	Perceptions of autonomy support → Need for autonomy satisfied	***Behavioural*** Increased gym attendance

1.4 Support Factors

1.4.1 Choice

Choice is present when the environment encourages customers to freely decide (a) whether or not they would like to engage in a particular behaviour (Deci et al., 1994) and, (b) between various options (Chatzisarantis, Kee, Thaung & Hagger, 2012b). Within co-production platforms customers face many choices (e.g., about design, colour, etc.) as they actively participate in the production process.

Provision of choice is found to have a powerful motivating effect on engagement; people are more likely to undertake an action or behaviour if they believe they chose it (Lewin, 1947). Some key theories in social psychology, such as dissonance theory (Collins & Hoyt, 1972), attribution theory (Kelley, 1973) and reactance theory (Brehm, 1966), presume that providing individuals even with seemingly trivial choices will have powerful effects on feelings of control (Langer, 1975; Lefcourt, 1973). In addition, choice has been found to cause people to bolster subjective evaluations of their decisions, which results in greater consistency between their behaviours and attitudes, leading to increased psychological well-being (Brehm, 1966; Festinger, 1962).

Exercising choice is considered a trigger for perceived autonomy (Deci et al., 1994) because, for individuals to act from within, they need to make decisions or choices that reflect their inner self. Traditionally, when examining perceptions of autonomy support, studies consider the presence or absence of choice and its effect on these perceptions (see Sheldon & Krieger, 2007; Williams et al., 2002; Deci et al., 2001; Chatzisarantis et al., 2012a). Such studies show that provision of choice is an important autonomy support factor (see Table 1). However, there has been some evidence that providing alternatives may have no effect on

motivation and performance-related outcomes (Flowerday, Schraw & Stevens, 2004; Flowerday & Schraw, 2003). Moreover, there is evidence that provision of choice does not always increase the sense of autonomy (Reeve et al., 2003). When the choices provided are not meaningful (Williams, 1998), or interesting (Flowerday et al., 2004) to the subjects, they do not experience psychological freedom in their decision-making. Thus, it is not just provision of choice but the type of choice that provides individuals a sense of autonomy (Reeve et al., 2003).

1.4.2 Rationale

A rationale provides consumers a reason to engage in the activity. Organisations typically give consumers reasons to participate in co-production platforms (e.g., Youbars.com invites its consumers to customise cereal bars by promoting it as easy and fun to create the ideal energy bar). Latham, Erez and Locke (1988) found that providing a rationale facilitates goal acceptance. Traditionally, rationales were not provided; it was simply a case of 'Do it because I said so'. Alternatively, the rationale was provided in a controlling way e.g., 'Do it because there will be a test' (Reeve et al., 2002). However, when a rationale is provided in a supportive way e.g., 'How about we try the cube, as it is the easiest one?' (Reeve & Jang, 2006), it impacts a person's identification with the task and allows him/her to recognise the personal value of the task (Reeve et al., 2002; Deci et al., 1994). For example, Assor et al. (2002) found that rationales that allow students to draw a link between their personal goals and the task at hand increase perceptions of autonomy support.

However, when the outcome studied was perceived autonomy, Reeve and Jang (2006) found that rationales provided by teachers in the classroom did not have a significant impact on students' perceived autonomy. Reeve and Jang (2006) note that this finding is not

generalisable as they used an inherently interesting activity in their study; they suggest that had they used an uninteresting activity, providing rationales would have had a positive influence on perceived autonomy. Moreover, Patall et al. (2013) found that rationale provision did not uniquely predict perceived autonomy.

1.4.3 Perspective-Taking

Perspective-taking also known as cognitive empathy (Smith, 2006) refers to being aware of and actively considering individuals' interests, point of view and feelings (Deci et al., 1994), and it has been shown to increase compassion toward the individual whose perspective was taken (Vorauer & Sucharyna, 2013; Davis, Conklin, Smith & Luce, 1996). Further, perspective-taking is found to facilitate social interactions and yield more coordinated interpersonal exchanges (Galinsky, Maddux, Gilin & White, 2008; Chartrand & Bargh, 1999). Perspective is taken in situations where an inner tension or conflict occurs (Deci et al., 1996) (e.g., when customers are asked to do something they are not comfortable with, or a task they do not completely understand).

In an online, co-production context, organisations sometimes include social features, such as brand communities, that allow customers to interact with each other on the co-production website (Huang & Benyoucef, 2015). Brand communities are specialised consumer communities (Zaglia, 2013), where members share mutual interests, enthusiasm and common problems faced by a brand (Mathwick, Wiertz & De Ruyter, 2008). These communities offer organisations a tool that allows customers to express criticism and share problems. Undertaking another person's perspective is considered a temporary, but psychologically powerful, merging of two minds and is found to enhance the affinity the perspective-taker feels toward the individual (Goldstein, Vezich & Shapiro, 2014).

Perspective-taking is often used as a tool to achieve better outcomes while undertaking business negotiations (Galinsky et al., 2008; Neale & Bazerman, 1983), which tend to give rise to tensions and conflicts. Galinsky et al. (2008) found that having one negotiator take their counterpart's perspective resulted in positive outcomes because it allowed the negotiator to better understand the needs and interests of their counterpart. Similarly, if individuals face tensions or conflicts while undertaking co-production activities, perspective-taking by other customers allows them to find efficient and otherwise hidden solutions for their counterpart.

Research has focused on the presence vs absence of perspective-taking statements (see Sheldon & Krieger, 2007; Chatzisarantis & Hagger, 2009). Koestner, Ryan, Bernieri and Holt (1984) demonstrate that an atmosphere which acknowledges children's feelings and views can set limits on their behaviours without undermining their intrinsic motivation. In addition, Reeve and Jang (2006) found that empathetic perspective-taking statements provided by teachers in the classroom, such as 'yes, I know it's difficult', had a significant impact on students' perceived autonomy. Contradicting these findings, Assor et al. (2002) reported that teachers acknowledging their students' perspectives, by allowing them to express negative feelings, did not have any influence on their perceptions of autonomy support in the classroom. They explain this finding in terms of students believing that their critical opinions would not lead to any substantial changes in the content and structure of learning; therefore, perspective-taking was not considered autonomy-supportive.

1.5 Perceptions of Autonomy Support

Most research studies (with a few exceptions; see Reeve & Jang, 2006; Reeve et al., 2003; Patall et al., 2013) use perceptions of autonomy support as the key mediating variable to show the impact of support factors on various positive outcomes (see Table 1). Perceptions of

autonomy support refer to whether the individuals perceive that they were provided with choice, rationale and perspective-taking by the social environment. I suggest studies need to go beyond merely understanding these perceptions of autonomy support and focus on capturing perceived autonomy instead, as a mediator between support factors and outcomes. It is evident that an individual can be provided with autonomy support (see Table 1) without any influence on autonomy perceptions (Reeve & Jang, 2006; Assor et al., 2002). Therefore, using Reeve et al.'s (2003) autonomy components of internal locus, volition and perceived choice, I will investigate how each of the respective support factors impacts perceptions of autonomy for the customer.

1.6 Intrinsic Motivation

SDT differentiates between two types of motivation – intrinsic and extrinsic – based on the goal or reason that gives rise to the action, (Ryan & Deci, 2000a). When a person is intrinsically motivated, he/she undertakes the activity for its own sake; for the pleasure, fun or challenge resulting from participation in it (Pelletier, Fortier, Vallerand & Briere, 2001). These activities are performed voluntarily, without any external pressures (Deci & Ryan, 1985c). For instance, a person who cooks gourmet food for the inherent pleasure of cooking is said to be intrinsically motivated for that activity (Deci et al., 1991). On the other hand, a person is extrinsically motivated when they undertake the activity for reasons separate from the activity itself; due to rewards or constraints placed on the individual by the environment that urges them to participate (Pelletier et al., 2001). Intrinsic motivation is said to be a motivational force that arises spontaneously, out of perceptions of autonomy (Deci et al., 1991). Thus, when the need for autonomy is satisfied, it gives rise to intrinsic motivation (Reeve & Jang, 2006; Reeve & Deci, 1996).

Yoon, Sung, Choi, Lee and Kim (2015) assert that task motivation is transient and, therefore, susceptible to contextual factors. Following Yoon et al. (2015), this research focuses on intrinsic situational motivation as opposed to motivation as a trait-like propensity. Situational motivation is described as "the motivation individuals experience in the activity they are currently engaged in" (Yoon et al., 2015, p. 386). Therefore, it embodies a situation-specific psychological state (Guay, Vallerand & Blanchard, 2000).

1.7 Outcomes

A core empirical finding from the SDT studies is that individuals function positively when the social environment within which they operate supports their need for autonomy (Reeve & Assor, 2011). As previously observed in Table 1, the outcomes of autonomous behaviours can be grouped into three types of responses: cognitive, emotional and behavioural.

Cognitive responses include increased perceptions of trust (Deci, Connell & Ryan, 1989); increased personal learning (Liu & Fu, 2011; Vansteenkiste, Matos, Lens & Soenens, 2007), enhanced cognitive engagement (Baard et al., 2004); increased acceptance of organisational change (Gagné et al., 2000); and increased perceived competence (Black & Deci, 2000). *Emotional responses* include enhanced interest/enjoyment in the activity undertaken (Black & Deci, 2000); reduction in anxiety (Black & Deci, 2000); enhanced emotional well-being (Sheldon & Krieger, 2007); increased satisfaction (Williams et al., 2005); and reduction in depressive symptoms (Williams et al., 2005). *Behavioural responses* include increased work performance (Baard et al., 2004); increased behavioural engagement (Baard et al., 2004); better career choices (Williams et al., 1997); higher grade point average (Sheldon & Krieger, 2007); better exam results (Sheldon & Krieger, 2007); increased intentions and participation levels for physical activities (Chatzisarantis & Hagger, 2009;

Chatzisarantis et al., 2007); better management of diabetes (Williams et al., 2005); and cessation of smoking (Williams et al., 2002).

In a co-production context, I am interested in studying the impact of perceived autonomy, intrinsic motivation and customer engagement on outcomes that are crucial for customers and organisations, namely participation enjoyment, repeat participation intentions and willingness to pay premium for the co-produced product.

1.7.1 Customer Participation Enjoyment

With the change in the role of customers from passive to active, there has also been a shift from traditional views of consumption to an experiential view (Arnould & Thompson, 2005). Customers are more willing to spend their discretionary income, time and effort to create experiences, as opposed to purchasing material objects (Hamblin, 2014). Creating an enjoyable experience for customers in the co-production activity has, therefore, become imperative for organisations (Prahalad & Ramaswamy, 2004). Thus, customer participation enjoyment is conceptualised "as a positive affective reaction elicited by the process of co-designing the product" (Franke & Schreier, 2010, p. 1021).

1.7.2 Repeat Participation Behaviour

Intention toward future co-production is defined as the "customer's willingness to participate in service production and delivery in the future" (Dong, Evans & Zou, 2008, p. 128). Given that customers are considered as partial employees during the co-production process, firms will benefit from better-trained consumers and the adoption of a longer-term perspective, especially if the quality of the product/service largely depends on co-production (Dong et al., 2008). One way of achieving this is by creating environments that allow customers to perceive

value in future co-production, as it enhances repeat participation intentions (Dong et al., 2008).

1.7.3 Willingness to Pay

Willingness to pay refers to the maximum amount of money a consumer is willing to spend for a product (Krishna, 1991). Developing and implementing co-production platforms involves high costs (Piller, Moeslein & Stotko, 2004), and it is imperative that firms know whether these platforms can yield enough benefit to cover such costs. For this, companies need to understand the features of online co-production platforms that prompt customers to pay more for self-designed products.

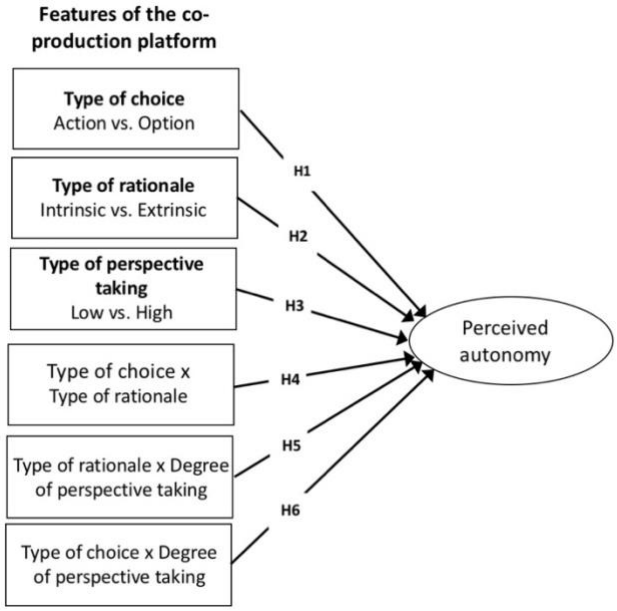
Chapter 2 – Empirical Studies

Study 1

2.1 Conceptual Framework

A firm can enhance customers' experiences of autonomy through the design of the online co-production platform and the climate the organisation creates for customers during the production process. The conceptual framework is broken down into two parts. The first part of the framework addresses the first research question: *What are the impacts of different types of choice, rationale and degrees of perspective-taking on perceived autonomy?* Figure 3 depicts the relationship between the types of choice, rationale and degree of perspective-taking and their interactions (I refer to these as 'features of the co-production platform'), and customer perceived autonomy.

Figure 3. Influence of features of co-production platform on perceived autonomy



The second part of the framework addresses the second research question: *Does enhanced perceived autonomy positively influence key co-production outcomes?* To answer this question, I propose that increased perceptions of autonomy in the co-production platform will influence customers' intrinsic motivation which, in turn, increases consumers' overall participation enjoyment, repeat participation intentions and willingness to pay for the created product (see Figure 4).

Figure 4. Influence of perceived autonomy on organisation outcomes

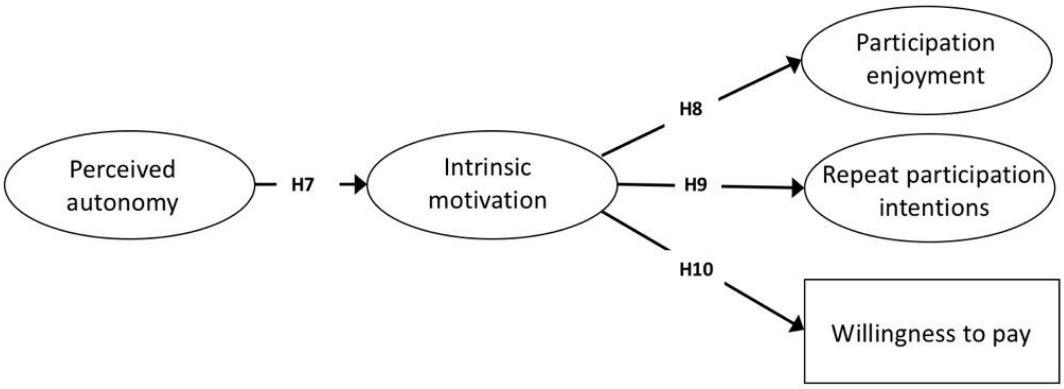


Table 2 provides a review of the constructs utilised in the conceptual framework, their common aliases and representative papers.

Table 2. Review of Construct Definitions, Common Aliases, and Representative Papers

Constructs	Definitions	Common Aliases	Representative Papers
Support factors			
Provision of choice	The organisation allows customers to freely decide whether or not they would like to engage in a particular behaviour or decide between various options when engaging in the co-production activity.	Options, non-controlling language	(Zuckerman, Porac, Lathin & Deci, 1978; Thompson & Wankel, 1980) (Boggiano, Flink, Shields, Seelbach & Barrett, 1993) (Deci et al., 1994) (Cordova & Lepper, 1996)
Action choice	Choices that give customers the freedom to select the work method, pace and effort, while undertaking the co-production activity.	—	(Thomas & Oldfather, 1997)
Option choice	Choices that give customers the freedom to select various preferences from the design toolkit, while undertaking the co-production activity.	—	(Reeve et al., 2003)
Provision of rationale	The organisation gives customers a reason to engage in the activity.	Reasoning	(Deci et al., 1994) (Reeve et al., 2002) (Assor et al., 2002)
Intrinsic rationale	The reason given for participation expresses the psychological benefits of participating in the co-production activity.	—	(Füller, 2010)
Extrinsic rationale	The reason given for participation expresses some performance-contingent economic reward of participating in the co-production activity.	Monetary rewards	(Tian, Bearden & Hunter, 2001)
Perspective-taking	The organisation actively considers the customers' interests, point of view and feelings, when engaging in the co-production activity.	Acknowledgement of perspectives, acknowledgement of feelings and perspectives, acknowledgement of negative feelings	(Neale & Bazerman, 1983) (Koestner et al., 1984) (Deci et al., 1994) (Galinsky et al., 2008) (Goldstein et al., 2014)

High perspective-taking brand communities	The brand community actively considers the customers' interests, point of view and feelings, when engaging in the co-production activity.	—	(Verleye, 2015)
Low perspective-taking brand communities	The brand community fails to consider customers' interests, point of view and feelings, when engaging in the co-production activity.	—	(Verleye, 2015)
Mediators			
Perceived autonomy	Customers experience internal perceived locus of control, volition, and perceived choice, while engaging with the organisations.	Perceived self-determination, self-initiation, self-governance, self-regulation	(Deci & Ryan, 1987) (Deci et al., 1994) (Reeve et al., 2003) (Reeve & Jang, 2006)
Intrinsic Motivation	Customers engaging in the activity for its own sake (i.e., for the pleasure, fun or challenge).	Autonomous motivation, internalised motivation	(Ryan & Deci, 2000a) (Pelletier et al., 2001) (Patall, Cooper & Robinson, 2008) (Deci & Ryan, 1985c) (Reeve et al., 2003)
Outcomes			
Participation Enjoyment	Customers' positive affective experience that results from their participation during the co-production activity.	Task enjoyment	(Reeve & Jang, 2006) (Dahl & Moreau, 2007) (Yim, Chan & Lam, 2012, p. 124)
Repeat participation intentions	Customers' willingness to participate in future co-production activities.	Long term adherence, future persistence, willingness to return	(Zuckerman et al., 1978) (Williams et al., 1998) (Dong et al., 2008, p. 128) (Lam, Cheng & Choy, 2010)
Willingness to pay	The dollar amount customers intend to pay for the product they co-produced.	Value, reservation price	(Krishna, 1991) (Cameron & James, 1987) (Homburg, Koschate & Hoyer, 2005) (Wertenbroch & Skiera, 2002)

2.2 Hypotheses Development

2.2.1 Type of Choice

Based on the classification compiled by Reeve et al. (2003), I distinguish between choices based on actions and those based on options. Reeve et al. (2003) operationalised action choices as flexibility in pace (e.g., "Take your own time in completing the puzzle"). Option choices were operationalised as choosing the order in task undertaken (e.g., "Which of these puzzles do you want to start with?"). I propose that understanding action choice simply as flexibility in pace offers a limited perspective on being able to control one's actions. Therefore, I expand this definition and operationalise action choices based on the suggestions of Thomas and Oldfather (1997), who propose three ways in which a student can feel self-determined: (1) by selecting and organising the way to present his/her work (method), (2) by selecting his/her own pace to pursue goals (pace), and (3) by selecting activities that better his/her own learning (effort).

In a co-production context, action choices are therefore provided when individuals are given the freedom to choose the work method, pace and effort (Thomas & Oldfather, 1997) while undertaking the design activity. In contrast, option choices are given as preferences to select from in order to complete the co-production task. I propose that when consumers are given option choices they do not experience the same degree of freedom compared to action choices. Option choices allow consumers to choose from a list of alternatives that have been pre-set; as such, the method and amounts of effort and time expended are standardised within the co-production platform. On the other hand, action choices allow customers the possibility of selecting the method in which they want to arrange the design activity and the amount of effort and time they want to dedicate to it.

Reeve et al. (2003) highlight that students not only want freedom to select the content they want to study, but they also want to choose the methods of performing the task, the modes of evaluation and the ways of presenting the work. Moreover, Williams et al. (2016) found that when individuals are allowed to organise the environment in which they engage, their perceptions of autonomy support are enhanced. Thus, I propose that when customers are given a series of ongoing choices in the method, pace and effort in the co-production environment, they can continuously self-regulate their behaviour, increasing their perceptions of autonomy. Katz and Assor (2007) highlight that the mere act of choosing is not the primary property of choice. Individuals experiencing action choices are not only able to experience the perceived choice dimension of autonomy, but also internal locus (e.g., 'Do I even want to go through all the steps of a t-shirt design activity?') and volition (e.g., 'Am I interested in adding an image to the t-shirt?'). Thus, I propose:

H1: Co-production platforms that provide action choices will have a greater positive impact on consumers' perceived autonomy, when compared to option choices.

2.2.2 Type of Rationale

Since organisations can provide various reasons to entice consumers to participate in their co-production activities (Roberts et al., 2013), it is important to understand the influence of the different types of rationales on perceived autonomy. Past approaches have been limited because they have studied provision of rationales in a supporting or controlling manner (Reeve et al., 2002; Deci et al., 1994). In the context of co-production, customers expect benefits for co-producing (Verleye, 2015), which can serve as potential rationales for participation. I distinguish between extrinsic and intrinsic rationales. Extrinsic rationales provided by organisations are often in the form of performance-contingent economic rewards,

which are given to consumers who match some standard of excellence set by the organisation. For example, Threadless.com gives customers cash rewards when their t-shirt design receives the maximum number of votes and is selected for production). Intrinsic rationales provided by the organisations express the psychological benefits of participation in the activity (Füller, 2010) such as satisfying their need for self-expression and uniqueness (Tian et al., 2001). For example, Youbars.com invites their consumers to customise cereal bars by rationalising that it is easy and fun to create your ideal energy bar.

Extrinsic rationales (DeCharmes, 1968) and competitions (Deci, 1971) that are performance-contingent are found to reduce self-determination because the individual's attention is shifted away from the task to attaining the external reward (Deci, Betley, Kahle, Abrams & Porac, 1981). When customers are co-producing something for a reward, it can create internal pressures to compete and win. These 'internal events or regulatory processes that control people or processes that pressure them to perform in specific ways' (Ryan et al., 1991, p. 187) are referred to as 'ego-involvement'. Such internal pressures are found to operate similarly to external controls in undermining the sense of freedom during the activity (Ryan, 1982; Plant & Ryan, 1985).

In contrast, providing a meaningful intrinsic rationale (Vansteenkiste et al., 2007), relieves individuals from internal pressures and allows them to feel a sense of freedom. Intrinsic rationales enable individuals to recognise the personal value of the activity rather than its rewards or pressures (Ryan & Deci, 2000b). When people undertake a task purely for themselves and not for reasons external to them, the activity gives rise to perceptions of autonomy (Reeve et al., 2002). Deci et al. (1996) highlight that, when people self-regulate their behaviour, they are fully engaged in the activity, unlike people whose behaviour is externally regulated. Thus, I propose:

H2: Co-production platforms that provide consumers with intrinsic rationales will have a greater positive impact on consumers' perceived autonomy, when compared to extrinsic rationales.

2.2.3 Type of Perspective-Taking

Perspective-taking, as a support factor, is commonly used in situations to reduce negative feelings. Negative emotions may arise due to not performing a task well (Reeve et al., 2003), or when a person is asked to complete an assignment they are not entirely comfortable with (Koestner et al., 1984). To date, autonomy support research has studied situations in which the perspective-taker is physically present within the same environment as the support-receiver. Similarly, co-production platforms typically provide customers with access to brand communities (Huang & Benyoucef, 2015) to express criticism and share problems. Therefore, members of the community can undertake the role of 'perspective-taker'. Brand community discussion forums on the co-production website involve real-time participation, where customers can discuss activity-related problems (Huang & Benyoucef, 2015).

I propose that often, within brand communities, different degrees of perspective-taking can exist. In some brand communities, customers are a part of a very empathetic community where participants support and understand each other, whereas in other communities customers can encounter conflicting thoughts and unsupportive members (De Vries, Gensler & Leeflang, 2012). Thus, I categorised brand communities as high perspective-taking (HPT) or low perspective-taking (LPT). HPT brand communities consist of members who are empathetic toward the individual facing problems, and successful in undertaking the perspective of the individual. LPT brand communities, on the other hand, comprise of

members who may attempt to undertake the perspective of the individual, but fail to see the situation from his/her point of view.

Perspective-taking is found to facilitate social interactions and yield more coordinated interpersonal exchanges (Galinsky et al., 2008; Chartrand & Bargh, 1999). When perspective-taking is done well it creates an empathetic atmosphere (Smith, 2006) that helps alleviate inner tensions and pressures and legitimates the individual's feelings (Constantinides & Fountain, 2008). Autonomy is truly felt when the inner tension disappears (Koestner et al., 1984). Thus, I propose:

> **H3:** Co-production platforms that have HPT brand communities will have a greater impact on consumers' perceived autonomy, when compared to platforms that have LPT brand communities.

Two way-interaction effects

2.2.4 Types of choice x Types of rationale

I expect that the effects of types of choice on perceived autonomy depend on types of rationale the consumer is provided for participating in the co-production platform. *Hypothesis 1* predicts that action choices have a greater positive influence on perceived autonomy than option choices. I expect the type of rationale provided for participation will moderate this effect. More specifically, I propose that, under action choice conditions, perceived autonomy will be greater when an intrinsic rather than extrinsic rationale is given, but this difference will not be significant under option choice conditions.

Exercising choice is considered a trigger for internal locus (Langer, 1975) because, for individuals to act from within, they need to make ongoing decisions or choices that reflect their inner self. Action choices allow consumers to organise their environment by providing

them with continuous choices of method, effort and pace (Thomas & Oldfather, 1997). When consumers are provided with an intrinsic rationale in action choice conditions, it allows them to internalise the reason to engage in an activity, which gives rise to internal locus. Therefore, I propose that when consumers make ongoing choices in the co-production activity, it allows them to act on their intention about different aspects of the activity (such as how long to spend designing the t-shirt, how to organise the design activity, etc.,) in accordance with their inner-self, enhancing their perceptions of autonomy. Thus, I predict an interaction between choice and rationale such that, when both action choices and intrinsic rationale are present in the same co-production platform, the two conditions are likely to have a positive synergy.

When consumers are provided with extrinsic rationales in action choice conditions, they feel limited in their experience of autonomy because their co-production experience is driven by the goal of winning a prize. Therefore, I propose that ongoing choices of method, effort and pace would be controlled by an external, performance-contingent reward, which is found to reduce self-determination (Deci et al., 1981). When consumers are provided with intrinsic rationales in option choice conditions, consumers will be able to internalise the reason for engaging in the co-production activity. However, option choices only allow consumers to select from a pre-determined list and the mere act of choosing does not enhance perceived autonomy (Reeve et al., 2003). In either of these two cases, relaxing one of the two conditions (i.e., extrinsic rationale or option choices) should enhance perceived autonomy.

When consumers are provided with extrinsic rationale and option choices, there is likely to be a negative influence on autonomy compared to the other three combinations. Extrinsic rationales give rise to external locus (Deci et al., 1981) and option choices limit the volition one can exercise in the activity (Reeve et al., 2003). Thus, when these conditions are

present together it will reduce perceived autonomy. Therefore, I hypothesise a two-way interaction among type of choice and type of rationale on perceived autonomy, such that:

> **H4:** Under action choice conditions, perceived autonomy will be greater when intrinsic versus extrinsic rationale is given, but this difference will not be significant under option choice conditions.

2.2.5 Types of rationale x Degree of perspective-taking

I expect that the effect of types of rationale on perceived autonomy depends on the degree of perspective-taking provided by the co-production platform. *Hypothesis 2* predicts intrinsic rationales have a greater positive influence on perceived autonomy than extrinsic rationales do. I expect the degree of perspective-taking to moderate this effect. More specifically, I propose that, under intrinsic rationale conditions, perceived autonomy will be greater when consumers are exposed to HPT brand communities versus LPT brand communities, but this difference will not be significant under extrinsic rationale conditions.

Sansone, Weir, Harpster and Morgan (1992) argued that providing a meaningful intrinsic rationale for an activity leads individuals to find tactics to make the activity more interesting for themselves, thus, enhancing their experience of psychological freedom. I argue that when consumers are provided with intrinsic rationale and have access to HPT brand communities, it provides them with an avenue to discuss problems or to ask questions of other consumers, allowing them to find tactics to further internalise their behaviour within the activity. When consumers' behaviours align with their personal interests, needs and preferences, it gives rise to perceptions of autonomy (Reeve et al., 2003). I predict an interaction between rationale and degree of perspective-taking, such that when intrinsic

rationale and HPT brand communities are present simultaneously the two conditions are likely to have a positive synergy.

When consumers are exposed to LPT brand communities under intrinsic rationale conditions, it provides consumers with a less empathetic atmosphere in which to co-produce. When consumers are working for reasons intrinsic to them, they highly value the task (Reeve et al., 2002), enhancing autonomy. However, if the brand community fails to create an empathetic environment (LPT brand communities), consumers will not have an avenue to alleviate inner tensions and pressures, reducing their felt volition in the platform (Koestner et al., 1984). When consumers are exposed to HPT brand communities in extrinsic rationale conditions, it provides them with access to an empathetic environment, which will alleviate inner tension and pressures which enhances felt autonomy (Koestner et al., 1984). However, consumers will be working for an extrinsic rationale, which will give rise to external locus (Deci et al., 1981). In either of these two cases, relaxing one of the two conditions (i.e., LPT brand communities and extrinsic rationale) should enhance perceived autonomy.

When consumers are exposed to LPT brand communities in extrinsic rationale conditions, there is likely to be a negative influence on autonomy compared to the other three combinations. Since LPT brand communities provide little opportunity to alleviate inner tensions and pressures, and extrinsic rationales give rise to external locus (Deci et al., 1981), the presence of these two conditions together will reduce perceived autonomy. Therefore, I hypothesise a two-way interaction among type of rationale and degree of perspective-taking on perceived autonomy, such that:

> **H5:** Under intrinsic rationale conditions, perceived autonomy will be greater when consumers are exposed to HPT brand communities versus LPT brand communities, but this difference will not be significant under extrinsic rationale conditions.

2.2.6 Types of choice x Degree of perspective-taking

I expect that the effect of types of choice on perceived autonomy depends on the degree of perspective-taking provided through the co-production platform. *Hypothesis 1* predicts action choices have a greater positive influence on perceived autonomy than option choices. I expect the degree of perspective-taking to moderate this effect. More specifically, I propose that, under action choice conditions, perceived autonomy will be greater when consumers are exposed to HPT brand communities versus LPT brand communities, but this difference will not be significant under option choice conditions.

In order for individuals to perceive autonomy, they need to experience psychological freedom while undertaking the co-production activity, which involves self-regulation of their behaviours by making ongoing choices that are aligned with their personal interests, needs and preferences (Deci et al., 1996). However, research has shown that customers do not always understand their needs and preferences (West, Brown & Hoch, 1996), or may have difficulty expressing their preferences to external institutions while customising (Franke, Keinz & Steger, 2009). Having access to HPT brand communities will provide consumers with potential opportunities to interact with people who will assist them with finding solutions (Huang & Benyoucef, 2015) or better understand their own preferences. Consumers can, in consequence, regulate their ongoing choices about their method, pace and effort, which in turn will enhance perceived autonomy. Therefore, I predict an interaction between choice and perspective-taking such that when action choice and HPT brand communities are present simultaneously the two conditions are likely to have a positive synergy.

When consumers are exposed to LPT brand communities in action choice conditions, they have the opportunity to make ongoing choices about method, pace and effort that

enhance perceived autonomy. However, consumers are provided with a less empathetic atmosphere, with no avenue to alleviate tension or inner pressures. If the platform is not seen as minimising pressure or supporting consumers, it can be perceived as a controlling atmosphere (Koestner et al., 1984), making consumers uncomfortable about sharing any problems with the brand community. Ryan, Mims and Koestner (1983) have demonstrated that an atmosphere in which individuals feel pressure can decrease intrinsic motivation (suggesting it can undermine perceptions of autonomy). When consumers are exposed to HPT brand communities in option choice conditions, they will have access to brand communities that provide consumers with access to people who assist them in finding solutions (Huang & Benyoucef, 2015), enhancing their perceived autonomy. However, option choices only allow the consumer to make choices from a set of pre-selected alternatives that do not always enhance autonomy (Reeve et al., 2003). In either of these two cases, relaxing one of the two conditions (i.e., LPT brand communities and option choices) should enhance perceived autonomy.

When consumers are exposed to LPT brand communities in option choice conditions, there is likely to be a negative influence on autonomy compared to the other three combinations. LPT brand communities can be perceived as a controlling atmosphere, making people uncomfortable, which reduces perceived autonomy (Ryan et al., 1983). Option choices can be limiting and do not enhance perceived autonomy (Reeve et al., 2003). Therefore, I hypothesise a two-way interaction among type of choice and degree of perspective-taking on perceived autonomy, such that:

> **H6:** Under action choice conditions, perceived autonomy will be greater when consumers are exposed to HPT brand communities versus LPT brand communities, but this difference will not be significant under option choice conditions.

2.2.7 Intrinsic Motivation

When a person is intrinsically motivated, he/she engages in an activity for its own sake (Deci & Ryan, 1985c). According to SDT, satisfying the need for autonomy underlies people's intrinsic motivation (Ryan & Deci, 2000b). Consequently, Reeve et al. (2003) demonstrate that perceived autonomy significantly increases intrinsic motivation. In the context of co-production, when customers act out of inner will rather than external pressures they feel psychologically free, which consequently motivates them to engage in an action for its own sake. Thus, I posit:

H7: Perceived autonomy will be positively associated with intrinsic motivation.

2.2.8 Participation Enjoyment

I propose that when consumers undertake the co-production activity due to intrinsic reasons, they experience high levels of enjoyment. The key reason for experiencing such enjoyment is understood by the 'flow experience' phenomenon. Csikszentmihalyi (1975) refers to flow experience as a state of being so occupied, engrossed or fully involved in the task (Higgins & Scholer, 2009) that undertaking the activity becomes 'the thing'. Based on this phenomenon, studies looking at participation in self-service technologies have found that intrinsically motivated individuals who engage in tasks for their own sake, simply for the experience of participation, can derive significant enjoyment from those activities (Bateson, 1985; Belk, Ger & Askegaard, 2000).

SDT posits that the enjoyment related with an activity is the highest when the outcome is endogenous to the activity (Kruglanski, 1975). Along these lines, behaviour and rewards become so strongly associated that the behaviour itself is experienced as rewarding (Freitas

& Higgins, 2002). Therefore, when consumers find the activity intrinsically interesting or challenging, they are likely to experience enjoyment while participating in the co-production activity. Thus, I posit that:

H8a: Intrinsic motivation is positively associated with participation enjoyment.

H8b: The relationship between perceived autonomy and participation enjoyment is mediated by intrinsic motivation.

2.2.9 Repeat Participation Intentions

I propose that when consumers experience intrinsic motivation during the co-production activity it will give rise to repeat participation intentions. Williams et al. (1998) highlight that individuals whose behaviours originate from inner volition are more prone to long-term adherence than those who are controlled or pressured. Moreover, Pelletier et al. (2001) conducted a two-year longitudinal study to understand the impact of motivation on the behavioural persistence of competitive swimmers. Their analysis found that self-regulation of behaviours gave rise to intrinsic motivation, which then led to long-term behavioural persistence.

I extend these findings to understand consumers' behaviour in the co-production activity. Typically, contributors to co-production activities undertake these projects for little or no money (Howe, 2008). One of the reasons they engage in these tasks is because they enjoy the process of participation and find it intrinsically interesting or challenging. Thus, when consumers undertake co-production tasks purely for the activity itself, rather than extrinsic rewards, they are more likely to see future value in co-production. Extending the results of Zuckerman et al. (1978), who found that participants' increased levels of intrinsic motivation augment their willingness to return to the lab to participate in puzzle solving, I propose that:

H9a: Intrinsic motivation is positively associated with repeat participation intentions.

H9b: The relationship between perceived autonomy and repeat participation intentions is mediated by intrinsic motivation.

2.2.10 Willingness to Pay

Franke and Piller (2004) demonstrated that willingness to pay for self-designed products can be much higher than willingness to pay for standard products. Consumers are willing to pay a considerable premium for watches they designed themselves, even compared to the best-selling firm-designed watches of the same technical quality, suggesting that co-production has the potential to be a profitable marketing strategy (Franke & Piller, 2004). I propose that when consumers undertake the co-production activity due to intrinsic reasons, they have a higher willingness to pay for the co-produced item. Vlosky, Ozanne and Fontenot (1999) found positive correlations between the willingness to pay a premium for environmentally certified wood products and intrinsic environmental motivations. Therefore, I extend these findings to the co-production environment and propose:

H10a: Intrinsic motivation is positively associated with willingness to pay.

H10b: The relationship between perceived autonomy and willingness to pay is mediated by intrinsic motivation.

2.3 Research Design and Methodology

This section presents the research design and methods used to test the hypotheses. This study was approved by the University of Melbourne Faculty of Business and Economics Ethics Committee, reference number 1545269.2 (see Appendix 1).

2.3.1 Design

To examine and analyse the proposed conceptual model, I developed a hypothetical co-production website called ‘Tops ‘n’ Tees’. The hypotheses are tested using an experimental 2 (choice: action vs option) × 2 (rationale: intrinsic vs extrinsic) x 2 (perspective-taking: high vs low) between-subject design.

2.3.2 Stimuli

Choices were manipulated as action and option choices. In the action choice condition, participants could choose any colour for the t-shirt from the colour palette (see Figure 5), insert any image from the array of images provided (Figure 6), add any text (Figure 7) and select a design for the pocket from the selection offered (Figure 8). In addition, participants were given choices in the method, pace and effort. For *method*, participants could select the step order for designing the t-shirt (see Figure 9) (e.g., participants could decide to insert the graphics before selecting the colours, then choose to design the pocket and finally add any text). For *pace*, participants had no restrictions on time allowed to work on the t-shirt design. For *effort*, participants had no restrictions as to which steps they went through for the design activity; they could choose whether or not they engaged in a particular step to design the t-shirt.

Figure 5. Colour selection

Figure 6. Image selection

Figure 7. Text insertion

Figure 8. Pocket insertion

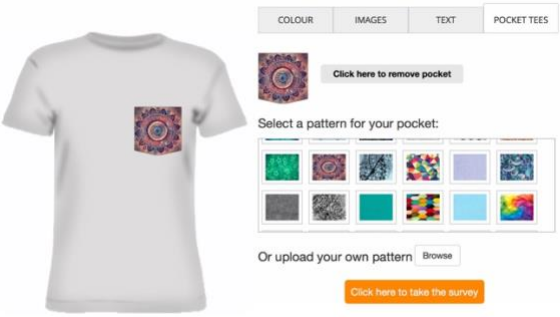
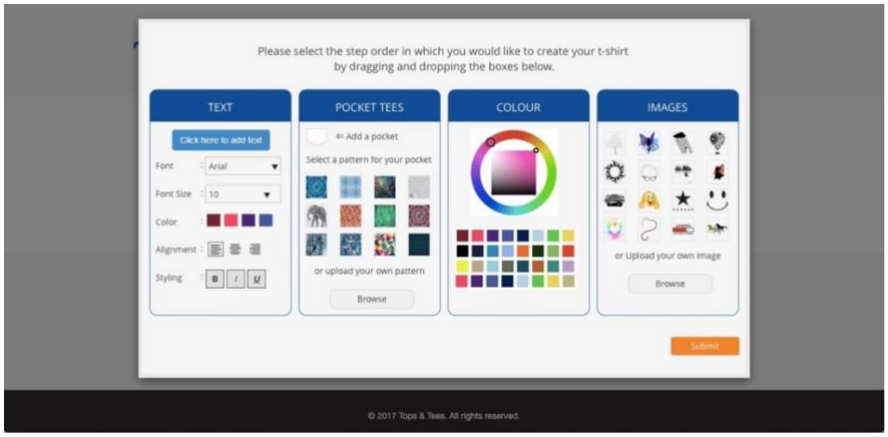


Figure 9. Choice in method in the action choice condition



Similarly, in the option choice condition participants were given the freedom to select any colour from the colour palette, insert an image from the images provided, add any text, and select a design for the pocket. However, the method, pace and effort were restricted. In the restricted *method*, participants did not see the prompt for arranging the step order of the activity (see Figure 5). Instead, participants were given a pre-selected order of steps decided by the experimenter. In the restricted *pace*, participants were given a pre-selected time to work on the t-shirt design activity (see Figure 10). Using a convenience sample (n = 15), the experimenter observed that the average time spent on the t-shirt design website was seven minutes. Thus, the pre-selected average time was set to fifteen minutes, to give participants ample time to complete the task. Choices in *effort* were also restricted. Participants had to go through all the steps involved in designing a t-shirt by having a forced response for each step (see Figure 11).

Figure 10. Pace restriction in option choice condition

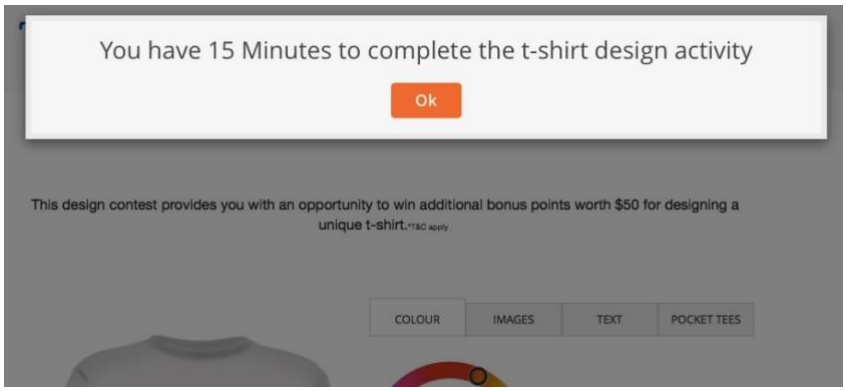
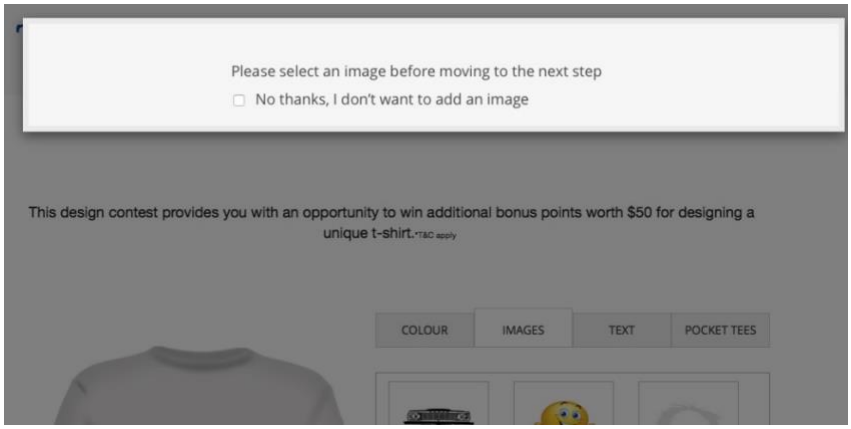


Figure 11. Effort restriction in option choice condition



Rationale was provided to the subjects when they entered the platform. Participants in the *extrinsic rationale* condition received a message stating 'this design contest provides you with an opportunity to win additional bonus points worth $50 for designing a unique t-shirt'. Participants in the *intrinsic rationale* received a message stating 'this design contest provides you with an opportunity to explore your creative inner self while designing a unique t-shirt'.

For perspective-taking, I created two brand communities, one with high-level and one with low-level perspective-taking (see Appendix 2 for the perspective-taking statements). The brand communities appeared after the consumers designed the t-shirt and the participants were asked to read the brand community reviews carefully. I ran a pre-test to find out whether

participants could differentiate between the perspective-taking of the two brand communities. For the pre-test, I recruited participants using a convenience sample (n = 30). The participants were shown one of the two sets of statements on the screen and were asked, 'Imagine the following reviews to be a part of a brand community forum for a t-shirt designing website called "Tops 'n' Tees". Please take a few minutes to view the following reviews and responses and then answer a few questions about your thoughts on the brand community.'

After reading the brand community statements, participants were asked to provide their impression of the brand community. To measure the degree of perspective-taking, a 7-point 4-item Likert scale from Patall et al. (2013) was used, where 1 = Not at all true, and 7 = Very true (see original and adapted items in Appendix 3). The coefficient alpha for this measure (α = 0.896) represents a sufficiently high level of consistency (Nunnally, 1978). Independent sample t-tests revealed a significant difference between LPT (M = 3.96; SD = 1.72) and HPT brand communities (M = 6.20; SD = 0.77); $t_{(28)}$= -4.582; $p < 0.01$.

2.3.3 Pre-Test

Participants for Pre-Test

A pre-test was conducted to check the manipulations of choice, rationale and perspective-taking conditions on the design website. For the pre-test, I recruited participants from Amazon Mechanical Turk (AMTURK). In total, 257 responses were collected, 21 of which were not included in the results analysis because they failed the attention test. Following data cleaning, 236 participants remained in the study for analysis. Subjects were offered $0.40 as an incentive to participate in an online survey administered through Qualtrics, a survey development and distribution software. The typical participant was a 26-to-34-year-old Caucasian female, with an undergraduate degree and earning $40,000-$49,999 per annum.

Procedure and Scales for Pre-Test

The survey comprised two parts: before and after designing the t-shirt on the customisation website. In Part 1, participants viewed the plain language statement (PLS) and were required to answer screening questions about their age, location, prior experience in using customisation platforms, and the device used to participate in the survey. The screening criteria for participants were that they be over 18 years of age, live in North America, have prior experience with customisation platforms, and use a computer or laptop to answer the survey. Ineligible subjects were directed to the end of the survey. Eligible participants were then randomly assigned to one of the eight experimental conditions of the t-shirt design platform (see Appendix 4). On the website, they created a t-shirt using the customisation tool and were subsequently shown a brand community page, where they read comments from brand community members. After viewing the website, participants were seamlessly redirected to Part 2 of the survey, where they recorded their responses about the action and option choices they felt they had during the design activity. To measure perceived action choice, a 7-point, 7-item Likert scale, inspired by Patall et al. (2013) and Assor et al. (2002) was used, where 1 = Not at all true, and 7 = Very true. To measure perceived option choice, a 7-point, 5-item Likert scale, inspired by Sheldon and Filak (2008) and Assor et al. (2002), was used, where 1 = Not at all true, and 7 = Very true (see original and adapted items used for pre-test in Appendix 5).

Next, participants were asked if they were provided a rationale by the website to participate in the t-shirt design. To measure whether participants recalled a rationale, I asked them, 'Were you given a reason by Tees 'n' Tops for participating in the t-shirt design activity?', with participants required to provide a 'yes or no' answer. Participants who answered yes were then shown two recognition statements: (1) 'The reason given to me for

participation was to win a cash reward for designing a unique t-shirt' (yes/no), and (2) 'The reason given to me for participation was to explore my creative inner self while designing a unique t-shirt' (yes/no). Participants who answered no went on to record their responses about the presence of perspective-taking in the brand community. To measure the degree of perspective-taking a 7-point, 4-item scale from Patall et al. (2013) was used, where 1 = Not at all true, and 7 = Very true (see original and adapted items used for pre-test in Appendix 5). Finally, all participants answered a few questions on the clarity of the survey, and an open-ended question about any suggestions to improve the survey. All participants were asked attention-test questions such as 'please click on "very true"'. Demographic information was also collected.

Scale Purification for Pre-Test

Prior to testing the manipulations, I established the validity of the measures used for action choice, option choice and perspective-taking. Since these measures were guided by already existing measures, I ran an exploratory factor analysis (EFA) using SPSS 21 to support the expected dimensionality of the constructs. I further ran a confirmatory factor analysis (CFA) to test the measurement model with maximum likelihood estimates using AMOS 24 to test for unidimensionality. Once unidimensionality was established, the scale reliability was re-checked using Cronbach's alpha. Instrument validity tests were also conducted to establish convergent and discriminant validity.

Exploratory Factor Analysis

An EFA was conducted on all items using principal component factoring with a direct oblimin rotation, as two of the three factors (i.e., action choice and option choice) were expected to be correlated (Gorsuch, 1983). The Kaiser-Meyer-Olkin measure (KMO) verifies sampling

adequacy for the analysis, KMO = .865 (Field, 2009). Bartlett's test of sphericity, χ^2 (105) = 2170.09; $p < .001$, indicates sufficient correlations between the items. As expected, three factors were extracted, accounting for 66.55% of the total variance (see Table 3).

Table 3. Exploratory Factor Analysis

Items	Option Choice	Perspective-Taking	Action Choice
I have a choice about the colours I can select for the t-shirt (Option_Choice_1).	.845		
The website allows me to choose the patterns to style the pocket on the t-shirt (Option_Choice_5).	.816		
I have a choice about the images I can insert on the t-shirt (Option_Choice_2).	.802		
The website allows me to decide how much effort I want to expend on the t-shirt design activity (Action_Choice_5).	.714		
The website allows me to choose the text I want to insert on the t-shirt (Option_Choice_3).	.647		
The website allows me to choose the colours to style the pocket on the t-shirt (Option_Choice_4).	.526		
The community members are understanding when customers express that design activity is hard (Perspective-taking_3).		.948	
The community members are accepting when customers express their feelings about the design activity (Perspective-taking_1).		.942	
The community members are open to hearing criticisms or complaints about the design activity (Perspective-taking_ 2).		.885	

The website allows me to choose what order I can design the t-shirt (Action_Choice_1).	-.916
I have a choice to select the step order of the design activity (Action_Choice_3).	-.890
I have a choice about the steps I engage in to design the t-shirt (Action_Choice_4).	-.888
The website encourages me to arrange the order of the t-shirt design activity in my own way (Action_Choice_2).	-.875
The website allows me to decide how much time I want to spend on the t-shirt design activity (Action_Choice_7).	-.628
The website does not allow me to work in my own pace (Action_Choice_6_Reversed).	-.313

Note: Factor loadings < .30 are not presented.

Confirmatory Factor Analysis

The adjusted goodness-of-fit index (AGFI) was used to evaluate the absolute fit of the model and comparative fit index (CFI) was used to evaluate the incremental fit of the model. Standardised root mean square residual (SRMR) and root mean square error of approximation (RMSEA) were both used as absolute measures of model fit (Iacobucci, 2010). CFI greater than 0.90 indicates a good fit to the data (Tabachnick & Fidell, 2000). RMSEA values less than .06 and SRMR values less than .08 are generally considered a good fit (Hu & Bentler, 1999). I conducted instrument validity tests to ensure discriminant and convergent validity (Bagozzi, Yi & Phillips, 1991). Convergent validity is established when the average variance extracted (AVE) of each factor is greater than .50 (Bagozzi & Yi, 2012).

The initial CFA model based on the EFA results did not fit the data well ($\chi^2(df = 87) = 307.88$; $p < 0.01$; AGFI = 0.832; CFI = 0.915; RMSEA = 0.094; SRMR = 0.087). As a result,

a number of items were deleted to improve fit. In the first round of deletions, I removed two items of action choice and one item of option choice, as the factor loadings fell above the cut-off of 0.5. In the second round of deletions, using modification indices as a guide, I deleted one item for option choice, as the error terms had high covariances across factors. After deleting the offending items, the fit of the measurement model was good (χ^2(df = 41) = 89.81; p < 0.01; AGFI = 0.919; CFI = 0.977; RMSEA = 0.064; SRMR = 0.048). Table 4 provides an overview of remaining items, factor loadings and average variance extracted for each latent construct. Composite reliability was demonstrated where values are above the minimum cut-off of 0.7 (Bagozzi & Yi, 2012).

Convergent validity is demonstrated when the average variance extracted (AVE) of each factor is greater than .50 (Bagozzi & Yi, 2012). Table 5 illustrates that all items and factors satisfy the criterion for convergent validity. Discriminant validity is demonstrated by comparing the AVE of each construct with the shared variance among each pair of constructs (Fornell & Larcker, 1981). Evidence of discriminant validity is provided since the AVE of each construct is greater than the shared variance with any other construct.

The results of the CFA indicate support for the proposed measurement model. These preliminary tests confirm the validity of the constructs action choice, option choice and perspective-taking to be employed as manipulation checks in the main experiment.

Pre-Test Results

For the action choice, independent sample *t*-tests revealed there was a significant difference between participants' felt action choice (M = 6.16; SD = 1.04) and option choice (M = 4.80; SD = 1.56); $t_{(234)}$= 7.74; p < 0.01. As expected, participants in the action choice condition had

higher mean scores in perceived action choice than participants who were exposed to option choice conditions. For option choice, independent sample *t*-tests revealed that participants did not feel there was significant difference in perceived option choice between action ($M = 6.11$; $SD = 1.07$) and option choice conditions ($M = 5.95$; $SD = 1.15$); $t_{(234)} = 1.12$; $p = 0.27$. Since option choice was present in both action and option conditions, I did not expect a difference between the two conditions. To test the rationale condition, I ran cross-tabs with Pearson's chi-squared test. The analysis showed that 73.2% of participants who were exposed to the intrinsic rationale condition recognised the rationale that was provided to them ($\chi^2 = 5.382$; $p < .05$). A second test for extrinsic rationale showed that 97.3% of participants who were exposed to the extrinsic rationale condition recognised the rationale that was provided to them ($\chi^2 = 43.789$; $p < .01$). These results indicate that participants can recall whether a rationale was provided on the website and the majority were able to correctly recognise the type of

Table 4. Items, standardised factor loadings and measures of validity

Scale and scale items	α	β	CR	AVE	MSV	ASV
Action choice						
The website allows me to choose what order I can design the t-shirt.	0.912	0.90	0.908	0.681	0.203	0.143
The website encourages me to arrange the order of the t-shirt design activity in my own way.		0.82				
I have a choice to select the step order of the design activity		0.91				
I have a choice about the steps I engage in to design the t-shirt.		0.87				
The website allows me to decide how much time I want to spend on the t-shirt design activity.		0.58				
Option choice						
I have a choice about the colours I can select for the t-shirt.	0.820	0.77	0.814	0.603	0.203	0.125
I have a choice about the images I can insert on the t-shirt.		0.77				
The website allows me to choose the patterns to style the pocket on the t-shirt.		0.79				
Perspective-taking						
The community members are accepting when customers express their feelings about the design activity.	0.933	0.92	0.936	0.823	0.084	0.066
The community members are open to hearing criticisms or complaints about the design activity.		0.87				
The community members are understanding when customers express that design activity is hard.		0.93				

Note: α = Cronbach alpha; β = standardised factor loading, CR = composite reliability; AVE = average variance extracted; MSV = maximum shared variance; ASV = average shared variance.

Table 5. Correlations, shared variance, and average variance extracted

	Action Choice	Option Choice	Perspective-taking
Action choice	**0.681**	*0.202*	*0.086*
Option choice	0.449	**0.603**	*0.049*
Perspective-taking	0.294	0.222	**0.823**

Note: Correlations are below diagonal, squared correlations are above the diagonal (in italics), and Average Variance Extracted (AVE) estimates are presented on the diagonal (in bold).

rationale used. For perspective-taking, independent sample *t*-tests revealed there was a significant difference between HPT (M = 5.91; SD = 1.04) and LPT brand community (M = 4.92; SD = 1.63); $t_{(234)}$= 5.55; $p < 0.01$. Last, as expected the degree of perspective-taking in the HPT community was found to be higher than that in the LPT community. As all the manipulation checks were successful, I proceeded to use these websites for the main study to test the hypotheses.

2.3.4 Main Study

Participants

In total, 348 responses were collected from the online panel of Survey Sampling Institute. Participants were offered $4.00 by the agency as an incentive to participate in the online survey, which was administered through Qualtrics. I deleted 12 cases flagged as speeders (participants who finished faster than 1/3 of the median length of the survey). I also omitted an additional 29 cases due to respondents failing the attention test. Further, as a part of data evaluation, I examined the data for univariate outliers, namely cases with standardised values exceeding ± 3.3. According to (Hair, Black, Babin, Anderson & Tatham, 2006), outliers

should be retained unless there is sufficient evidence that these responses are aberrant and not representative of any observations in the sample. Therefore, I only deleted outliers if they exceeded the standardised values on more than one variable. Following data cleaning, 306 participants remained in the study for analysis. The participant profile is given in a table in Appendix 6. The typical participant was a 40-to-44-year-old Caucasian female, with an undergraduate degree and earning $80,000–$89,999 per annum.

Measures and controls

Well-established, reliable and valid measures were sourced and adapted to an online t-shirt design activity context (see Appendix 7 for complete scales used, including original and adapted items). To measure participants' perceived autonomy, an 11-item measure on a 7-point Likert scale was used, where 1 = Not at all true, and 7 = Very much true. These items were adapted from Reeve et al. (2003) and Reeve and Jang (2006). To measure intrinsic motivation, a 4-item measure was adapted from Guay et al. (2000) on a 7-point Likert scale, where 1 = Not at all in agreement, and 7 = In complete agreement. To measure customer participation enjoyment, a 5-item measure was adapted from Yim et al. (2012), using a 7-point Likert scale, where 1 = Strongly disagree, and 7 = Strongly agree. To measure repeat participation intentions, a 3-item measure was adapted from Dong et al. (2008), using a 7-point Likert scale, where 1 = Extremely unlikely, and 7 = Extremely likely. An open-ended question was used to measure willingness to pay a dollar amount ('How much are you willing to pay for the t-shirt you just created on Tops 'n' Tees?'). Demographic information was also collected.

I also included a number of control variables for intrinsic motivation, namely trait autonomy, age and gender. People with high trait autonomy have a natural tendency to be intrinsically motivated, whereas people with low trait autonomy have a general tendency toward being controlled by external motivation (Sheldon, 1995). To measure trait autonomy, a 10-item measure was used from Sheldon (1995), using a 7-point Likert scale, where 1= Only A feels true and 7= Only B feels true. Participants read the pairs of statements, one pair at a time, and think about which statement within the pair seems more true to them at this point in their life. Older customers have been shown to experience higher levels of intrinsic motivation while engaging in work (Sheldon, Kasser, Houser-Marko, Jones & Turban, 2005). Finally, men report higher levels of intrinsic motivation and enjoyment than women (Carroll & Loumidis, 2001).

In testing the effect of intrinsic motivation on the dependent variables (participation enjoyment, repeat participation intentions and willingness to pay), I controlled for the individual's perceived ability, experience in co-production platforms, age and gender. Co-production ability refers to customers' perception of having the necessary skills and confidence to perform a specific co-production task (Dong et al., 2008). Customers who have high perceived ability are more confident and competent in fulfilling their co-production tasks and, therefore, perform better and feel greater enjoyment and satisfaction in co-production platforms (Haumann et al., 2015). To measure customer perceived ability, a 3-item measure was adapted from Dong et al. (2008) using a 7-point Likert scale, where 1 = Strongly disagree, and 7 = Strongly agree. Customers with a high level of experience with t-shirt design activities (Dellaert & Stremersch, 2005) are better equipped to make valuable contributions to the co-

production platform (Auh, Bell, McLeod & Shih, 2007). Previous experience was measured by one item, 'I have a lot of experience in designing t-shirts in an online platform', where 1 = Strongly disagree, and 7 = Strongly agree (Haumann et al., 2015).

Procedure

The survey comprised two parts: before and after designing the t-shirt on the co-production website. In Part 1, participants viewed the PLS (see Appendix 8) and were required to answer screening questions about their age, location and the device used to participate in the survey. The screening criteria for participants were that they should be above 18 years of age, live in North America and use a computer or laptop to answer the survey. Ineligible subjects were directed to the end of the survey. Eligible participants were randomly assigned to one of the eight experimental conditions (see Appendix 4). On the t-shirt design website, they created a t-shirt using the customisation tools and were subsequently shown a brand community page, where they read comments from existing brand community members. After viewing the website, participants were seamlessly redirected to Part 2 of the survey, where they recorded their perceptions of autonomy and intrinsic motivation. Further, they recorded their participation enjoyment, repeat participation intentions, willingness to pay for the t-shirt created as well as other control variables, such as perceived ability for co-production, previous experience in co-production platforms and trait autonomy. I also included the manipulation check scales from the pre-test study. All participants were asked attention-test questions, such as 'please click on "very true"'. The PLS can be found in Appendix 8, and the survey in Appendix 9.

Analysis Plan

I tested main effect and interaction effect hypotheses 1–6 using the experimental conditions (choices, rationale and perspective-taking) as independent variables, with three-way between-groups analysis of variance (ANOVA) using SPSS 22. Upon finding significance in the ANOVA, I ran planned contrasts for the stated hypotheses.

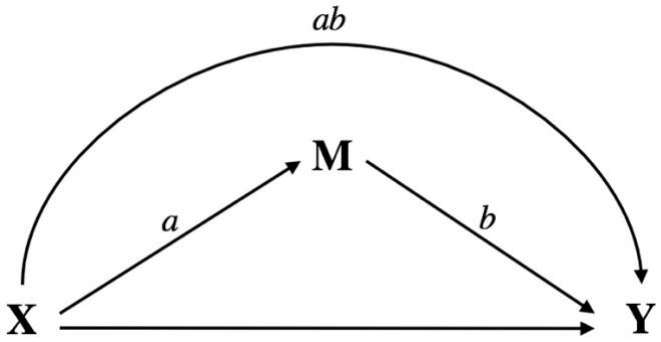
To test for mediation and its effects on the outcomes, I ran a structural equation model (SEM) with maximum likelihood estimation, using Mplus v7.4. This analysis follows a two-step approach to testing the hypotheses (Anderson & Gerbing, 1988). This includes establishing the unidimensionality and reliability of the observed measures before testing the hypothesised relationships. Logistic regression was undertaken with maximum likelihood estimation procedures.

Since the independent variables (IVs) are categorical, I used dummy coding to test the hypotheses. The IVs (i.e., choices, rationale and perspective-taking) have two levels (k); the parameter estimates were reduced to $k - 1$ (Cohen, Cohen, West & Aiken, 2013). For choices, one dummy variable was created: AC [1 = Action choice; 0 = Option choice], with option choice as the reference group. In addition, a dummy variable was created for rationale: IR [1 = Intrinsic rationale; 0 = Extrinsic rationale], with extrinsic rationale as the reference group. I also created a dummy variable for perspective-taking: HPT [1 = High perspective-taking; 0 = Low perspective-taking], with low-perspective-taking as the reference group (Hayes & Preacher, 2014).

To test mediation effects for hypotheses 7–10, I selected the product of coefficients approach, which is used to test the indirect effects of perceived autonomy (independent

variable, X) on co-production outcomes (dependent variable, Y: participation enjoyment, repeat participation intentions and willingness to pay) via a mediator (M: intrinsic motivation). According to this approach, the indirect effect is the product of coefficients from X to M and from M to Y (Zhao, Lynch & Chen, 2010). For instance, Figure 12 depicts a simple mediation relationship where the indirect effect *ab* is the product between the path from the independent variable X to mediator M (*a*) and the path from M to a dependent variable Y (*b*). Indirect effect *ab* refers to the effect an increase in one unit in the independent variable X has on the dependent variable Y through the mediator M.

Figure 12. Depiction of the indirect effects in a simple mediation relationship



Once the indirect effect has been calculated, the significance is tested via bootstrapping. Bootstrapping is a procedure that builds confidence intervals on artificially generated distributions of indirect effects (Preacher & Hayes, 2008). Significance of indirect effects is determined when the 95% bias-corrected bootstrap confidence interval does not contain zero (Hayes & Preacher, 2014).

2.4 Results

Before testing the hypotheses, I examined the reliability of all the measures (see Table 6). Cronbach's alpha coefficients exceeded the acceptable threshold of 0.7 for all established measures (Nunnally, 1978). Means, standard deviations and reliability measures for the total sample are presented in Table 6.

Table 6. Means, standard deviations and reliability of measures – Study 1

Variable	Mean *(M)*	Standard Deviation *(SD)*	Cronbach Alpha *(α)*
Mediators			
Perceived autonomy	5.04	1.20	0.96
Intrinsic motivation	5.15	1.48	0.92
Dependent variables			
Participation enjoyment	5.36	1.44	0.96
Repeat participation intentions	5.04	1.66	0.95
Willingness to pay	$17.74	$17.26	-

2.4.1 Manipulation Check

For the action choice, independent sample *t*-tests revealed there was a significant difference between participants' felt action choice (M = 6.23; SD = 1.06) and option choice (M = 5.18; SD = 1.59); $t_{(304)}$= -6.77; $p < 0.01$. As expected, participants in the action choice condition had higher mean scores for perceived action choice compared to participants who were exposed to the option choice conditions. For perceived option choice, independent sample *t*-tests revealed that participants did not feel there was significant difference between action (*M*

= 6.21, *SD* = 1.01) and option choice conditions (*M* = 6.38, *SD* = 0.92); $t_{(304)}$= -1.51, *p* = 0.13. Since option choice was nested in the action condition, I did not expect a difference between the two conditions. For rationale, I ran cross-tabs with Pearson's chi-squared test. The analysis revealed that 83.9% of participants who were exposed to the intrinsic rationale condition recognised the rationale that was provided to them ($\chi^2 = 5.382$; $p < .05$). A second test for extrinsic rationale showed that 81.5% of the participants who were exposed to the extrinsic rationale condition recognised the rationale that was provided to them ($\chi^2 = 11.08$; $p < .01$). These results indicate that participants can recall whether a rationale was provided on the website and the majority are able to correctly recognise the type of rationale used. For perspective-taking, independent sample *t*-tests revealed there was a significant difference between HPT (*M* = 6.22; *SD* = .90) and LPT brand community (*M* = 5.06; *SD* = 1.35); $t_{(304)}$= -8.85; *p* < 0.01. As expected, results confirmed that the degree of perspective-taken in the HPT community is higher than that of the LPT community. As the manipulation checks were successful, I proceeded to test the hypotheses for the main study.

2.4.2 ANOVA and Planned Contrasts

A 2 (choice) x 2 (rationale) x 2 (perspective-taking) ANOVA revealed a significant main effect of choices on perceived autonomy ($F_{(1, 305)} = 3.08$; $p < 0.1$; $\eta_p^2 = 0.01$; $MS_{\text{choices}} = 4.12$). Planned contrasts showed that perceived autonomy was significantly higher in action choice conditions (*M* = 5.15, SE = 0.10) compared to option choice conditions (*M* = 4.93, SE = 0.09; $t_{(298)} = 1.69$; $p < 0.1$), supporting H1 (see Table 7).

Table 7. Descriptives for perceived autonomy by choice

Choice	*M*	*SD*	CIs
Action choice (N = 154)	5.15	1.25	(4.95 – 5.35)
Option choice (N = 152)	4.93	1.15	(4.75- 5.11)

Note: CI = 95% Confidence Intervals

A 2 (choice) x 2 (rationale) x 2 (perspective-taking) ANOVA revealed a significant main effect of rationale on perceived autonomy ($F_{(1, 305)} = 4.20$; $p < 0.05$; $\eta_p^2 = 0.01$; $MS_{\text{rationale}} = 5.72$). Consistent with H2, planned contrasts showed that perceived autonomy was significantly higher in intrinsic rationale conditions ($M = 5.18$, SE = 0.09) compared to extrinsic rationale conditions ($M = 4.90$, SE = 0.10; $t_{(298)} = 1.96$; $p < 0.05$) (see Table 8).

Table 8. Descriptives for perceived autonomy by rationale

Rationale	*M*	*SD*	CIs
Intrinsic rationale (N = 151)	5.18	1.22	(5.00 – 5.36)
Extrinsic rationale (N = 155)	4.90	1.26	(4.71- 5.10)

Note: CI = 95% Confidence Intervals

A 2 (choice) x 2 (rationale) x 2 (perspective-taking) ANOVA revealed a significant main effect of perspective-taking on perceived autonomy ($F_{(1, 305)} = 8.98$; $p < 0.03$; $\eta_p^2 = 0.02$; $MS_{\text{perspective-taking}} = 12.68$). Consistent with H3, planned contrasts showed that perceived autonomy was significantly higher in high perspective-taking conditions ($M = 5.24$, SE = 0.10) compared to low perspective-taking conditions ($M = 4.84$, SE = 0.09; $t_{(298)} = 3.00$; $p < 0.01$) (see Table 9).

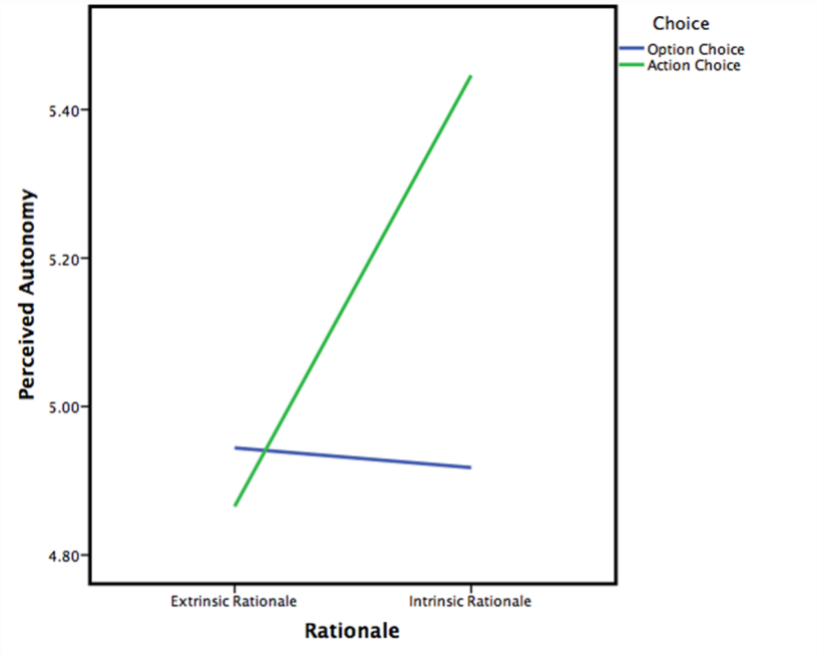
Table 9. Descriptives for perceived autonomy by perspective-taking

Perspective-taking	*M*	*SD*	CIs
High perspective-taking (N = 149)	5.24	1.22	(5.04-5.44)
Low perspective-taking (N = 157)	4.84	1.16	(4.66- 5.03)

Note: CI = 95% Confidence Intervals

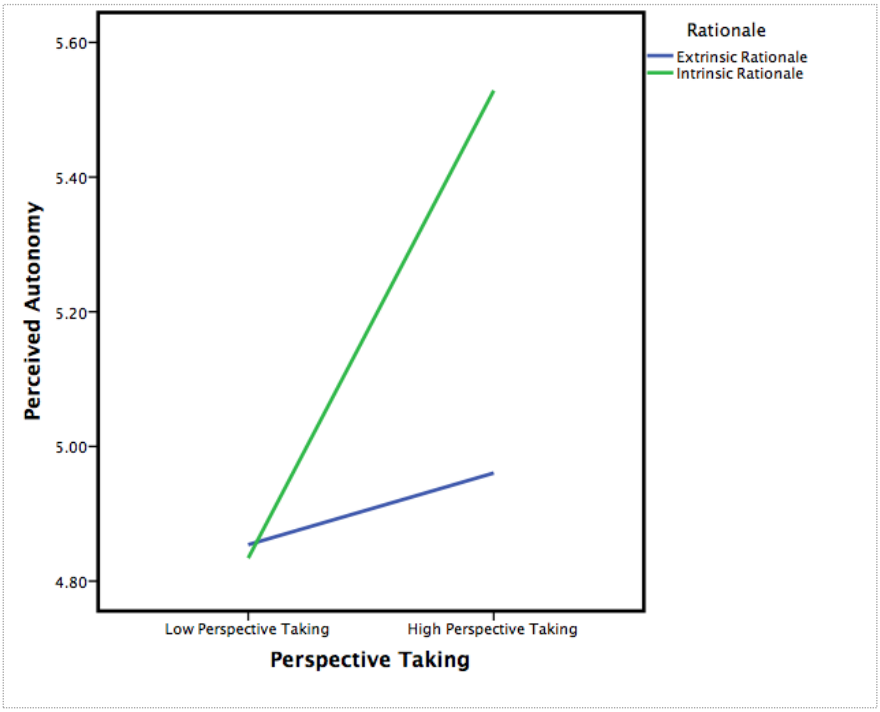
The choices × rationale interaction was significant ($F_{(1, 305)} = 5.41$; $p < 0.05$; $\eta_p^2 = 0.01$; $MS_{(choice \times rationale)} = 7.36$), supporting H4. Simple effects analysis showed that, in the action choice condition, perceived autonomy was significantly greater when intrinsic rationale was provided compared to conditions to when extrinsic rationale was provided ($M_{intrinsic\ rationale} = 5.45$, $M_{extrinsic\ rationale} = 4.87$; $F_{(1, 298)} = 9.53$, $p < 0.01$) (see Figure 13). However, in the option choice condition, there was no difference in perceived autonomy between intrinsic and extrinsic rationale ($M_{intrinsic\ rationale} = 4.91$, $M_{extrinsic\ rationale} = 4.94$; $F_{(1, 298)} = 0.04$, $p = 0.845$).

Figure 13. Interaction between choice and rationale



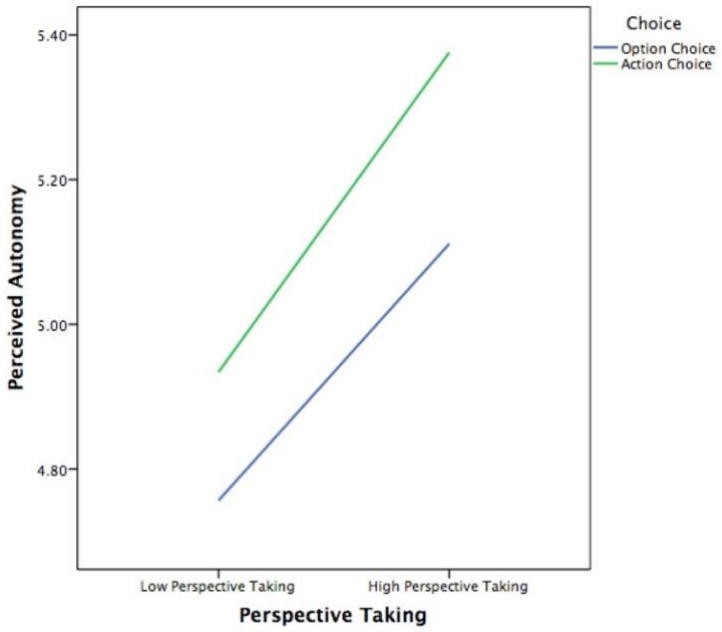
The rationale x perspective-taking interaction was significant ($F_{(1, 305)} = 4.99$; $p < 0.05$; $\eta_p^2 = 0.01$; $MS_{\text{(rationale x perspective-taking)}} = 6.78$), supporting H5. Simple effects analysis revealed that, in the intrinsic rationale condition, perceived autonomy was significantly greater when consumers were exposed to HPT brand communities compared to conditions when consumers were exposed to LPT brand communities ($M_{\text{HPT brand community}} = 5.53$, $M_{\text{LPT brand community}} = 4.87$; $F_{(1, 298)} = 9.06$, $p < 0.01$) (see Figure 14). However, in the extrinsic rationale condition, there was no difference in perceived autonomy between HPT and LPT brand communities ($M_{\text{HPT brand community}} = 4.96$, $M_{\text{LPT brand community}} = 4.85$; $F_{(1, 298)} = 0.01$, $p = 0.89$).

Figure 14. Interaction between rationale and perspective-taking



In addition, the choice x perspective-taking interaction was not significant ($F_{(1, 305)} = 0.081$; $p < 0.77$; $\eta_p^2 = 0.00$; $MS_{\text{(choice x perspective-taking)}} = 0.11$), refuting H6. Simple effects analysis revealed that in the action choice conditions, there was no difference in perceived autonomy between HPT and LPT brand communities ($M_{\text{HPT brand community}} = 5.38$, $M_{\text{LPT brand community}} = 4.94$; $F_{(1, 298)} = 2.03$, $p = 0.16$) (see Figure 15). Similarly, in the option choice there was no difference in perceived autonomy between HPT and LPT brand communities ($M_{\text{HPT brand community}} = 5.11$, $M_{\text{LPT brand community}} = 4.74$; $F_{(1, 298)} = 1.07$, $p = 0.30$).

Figure 15. Interaction between rationale and perspective-taking



Last, the three-way interaction between choice x rationale x perspective-taking on perceived autonomy interaction was not significant ($F_{(1, 305)} = 0.13$; $p = 0.72$; $\eta_p^2 = 0.00$; $MS_{\text{(choice x rationale x perspective-taking)}} = 0.17$).

2.4.3 Confirmatory Factor Analysis

CFA was run for all latent constructs in the model. Results suggest the model is overall a good fit ($\chi^2(df = 247) = 690.802$; $p < 0.01$; CFI = 0.939; TLI = 0.932; RMSEA = 0.077; SRMR = 0.060). As shown in Table 10, all factor loadings were statistically significant and above the cut-off value of 0.5. Composite reliability was demonstrated (all values > 0.7). Thresholds for discriminant validity, as outlined in the methods section, were achieved for all constructs.

Table 10. Confirmatory factor analysis and correlation matrix - Study 1

Variables	1	2	3	4	5	6	7	8	9	10
1) Autonomy	**.670**									
2) Intrinsic Motivation	.264**	**.741**								
3) Participation Enjoyment	.203**	.619**	**.842**							
4) Repeat Participation	.183**	.516**	.726**	**.876**						
5) Willingness to pay	.089	.233**	.265**	.274**	-					
6) Perceived Ability	.113*	.376**	.492**	.354**	.216**	**.829**				
7) Trait Autonomy	.070	.185**	.149**	.075	.058	.327**	**.667**			
8) Past Experience	.033	.126*	.209**	.187**	.306**	.311**	.165**	-		
9) Age	.054	.002	-.068	.020	-.225**	-.117*	.038	-.348**	-	
10) Gender	.049	-.036	-.018	-.106	-.170**	.012	-.109	-.198**	.063	-
CR	.957	.919	.964	.954	-	.936	0.896	-	-	-
MSV	.069	.383	.527	.527		.242	.107	-	-	-
ASV	.032	.179	.232	.192	-	.126	.035	-	-	-

Note: Correlations are below diagonal, and Average Variance Extracted (AVE) estimates are presented on the diagonal (in bold); CR = composite reliability; MSV = maximum shared variance; ASV = average shared variance; **Correlation is significant at the 0.01 level (2-tailed); *Correlation is significant at the 0.05 level (2-tailed).

2.4.4 SEM – Hypothesised Relationships

The findings presented in Table 11 and Figure 16 suggest that the hypothesised structural model fits the data well (χ^2(df = 716) = 1536.174; p < 0.01; CFI = .916; TLI = .909; RMSEA = .061; SRMR = .069). Supporting H7, perceived autonomy was found to have a significant influence on intrinsic motivation ($\beta = 0.276$ $p < 0.01$).

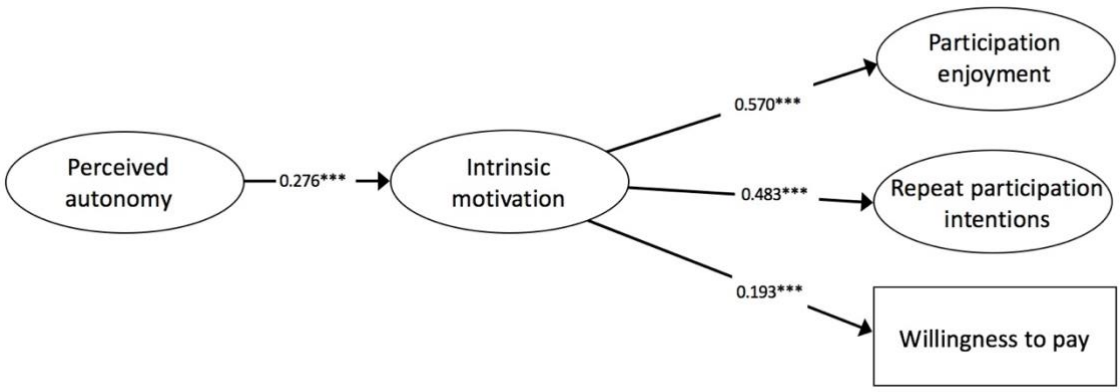
Table 11. Structural model path relationships - Study 1

Specified Paths	β	**SE**	**Significance**
DV: Intrinsic motivation			
Perceived autonomy	.276	.071	$p < .01$
Trait autonomy	.204	.061	$p < .01$
Age	-.013	.059	$p = .824$
Gender	-.023	.058	$p = .691$
DV: Participation enjoyment			
Intrinsic motivation	.570	.071	$p < .01$
Perceived ability	.296	.082	$p < .01$
Experience	.057	.050	$p = .256$
Age	-.024	.043	$p = .573$
Gender	.006	.047	$p = .900$
DV: Repeat participation intentions			
Intrinsic motivation	.483	.073	$p <.01$
Perceived ability	.175	.081	$p <.05$
Experience	.095	.057	$p <.1$
Age	.071	.051	$p =.163$
Gender	-.085	.052	$p <.1$

DV: Willingness to pay			
Intrinsic motivation	.193	.043	$p < .01$
Perceived ability	.067	.045	$p = .137$
Experience	.191	.049	$p < .01$
Age	-.149	.040	$p < .01$
Gender	-.121	.041	$p < .01$
Squared multiple correlations R^2			
Intrinsic motivation	.127	.048	$p < .001$
Enjoyment	.455	.055	$p < .001$
Repeat participation intention	.303	.055	$p < .001$

Note: β = standardised estimates; SE = standard error; Control variables are presented in grey

Figure 16. Standardised regression weights reported for the SEM- Study 1



Note: $^{*}p < .10$, $^{**}p < .05$, $^{***}p < .01$

Table 12 presents the findings for the indirect relationships. Supporting H8a, intrinsic motivation was found to have a significant influence on participation enjoyment ($\beta = 0.570$ $p < 0.01$). The indirect effect of perceived autonomy on participation enjoyment was found to be significant, with a 95% bias-corrected bootstrap confidence interval not containing zero (*ab*

= 0.158; SE = 0.045; [CI = 0.077, 0.251]), supporting H8b. The relative indirect effect implies that participants who perceived high levels of autonomy in the co-production platform were 0.158 units more likely to enjoy participating in the t-shirt design activity. Supporting H9a, intrinsic motivation was found to have a significant influence on repeat participation intentions (β = 0.483 $p < 0.01$). The indirect effect of perceived autonomy on repeat participation was found to be significant, with a 95% bias-corrected bootstrap confidence interval not containing zero (*ab* = 0.113; SE = 0.039; [CI = 0.066, 0.218]), supporting H9b. The relative indirect effect reveals that participants who perceived high levels of autonomy in the co-production platforms were 0.113 units more likely to participate in future t-shirt design activities. Supporting H10a, intrinsic motivation was found to have a significant influence on willingness to pay (β = 0.193 $p < 0.01$). The indirect effect of perceived autonomy on willingness to pay was found to be significant, with a 95% bias-corrected bootstrap confidence interval not containing zero (*ab* = 0.053; SE = 0.018; [CI = 0.023, 0.092]), supporting H10b. The relative indirect effect reveals that participants who perceived high levels of autonomy in the co-production platforms were 0.053 units more likely to be willing to pay for the t-shirt design they created.

Table 12. Confidence intervals, indirect effects, direct effects, and standard error

Relationship tested			LLCI	ULCI	Indirect Effect Estimate	SE	Hypothesis Supported
IV	**Mediator**	**Outcome**					
Perceived autonomy	Intrinsic motivation	Enjoyment	0.077	0.251	0.158***	0.045	Yes
Perceived autonomy	Intrinsic motivation	Repeat participation	0.066	0.218	0.133***	0.039	Yes
Perceived autonomy	Intrinsic motivation	Willingness to pay	0.023	0.092	0.053***	0.018	Yes

Note: LLCI = Lower level confidence interval; ULCI = upper level confidence interval; SE = standard error; *$p < .10$; **$p < .05$; ***$p < .01$.

In Study 1, I investigated the influence of all three support factors (choice, rationale, and perspective-taking) on consumers' perceived autonomy. Now I take an in-depth look at each of the support factors (studies 2, 3, 4 and 5).

Study 2 – Types of Choice

2.5 Hypothesis Development

Providing c*hoice* is perceived as a critical sign of giving people autonomy (Schwartz, 2004) and in organisational literature, job autonomy is defined as "the extent to which an individual can determine his or her methods, pace, and effort to accomplish work tasks" (Wang & Cheng, 2010, p. 110). Studies to date have always looked at the presence or absence of choice and its influence on autonomy. Williams et al. (2016) highlight that this way of studying choice is very limited and that scholars need to understand the different ways choice can be provided when individuals are undertaking activities.

In Study 1, I operationalised action choices as providing a co-production environment where consumers can (1) select and organise the way they want to design their t-shirt (*method*), (2) select their own *pace* in completing the activity, and (3) decide whether they want to participate in all the different steps of the design activity (*effort*). However, it is unknown whether choices in method, effort, and pace are all equal drivers of perceptions of autonomy. Thus, the purpose of the study is to understand the relative influence of choice in method, pace and effort on perceived autonomy.

Choice in method is when consumers determine how to organise the co-production environment in which they are participating. *Choice in pace* is when consumers determine the amount of time they want to spend (Williams et al., 2016) on the co-production activity. As for *choice in effort*, when reviewing the literature, it became apparent that it would be difficult to differentiate it from pace because they are highly correlated. This is because time to complete the activity is normally the manipulation used for effort (for examples, see Mohr & Bitner,

1995; Garbarino & Edell, 1997). For instance, Dantas and Carrillat (2013) use a scenario-based manipulation for effort, where the questionnaire completed by participants in the low-effort scenario is shorter and therefore takes less time than the survey in the high-effort condition. Given that it is difficult to separate effort and pace to isolate their effect on autonomy, in Study 2 I focus on the influence of choice in method and choice in pace on perceived autonomy.

I argue that choice in pace will have a stronger influence on perceptions of autonomy than choice in method. Stefanou, Perencevich, DiCintio and Turner (2004) found that when students are given organisational autonomy support (e.g., allowing students to participate in setting classroom rules or to choose the seating arrangement), it provides them with very little opportunity to making meaningful choices. Williams (1998) suggested that, unless choices are considered meaningful, they do not enhance an individual's autonomy. I argue that since choice in method, which allows consumers to organise the co-production environment, will provide little opportunity to make meaningful choices it will not be a major factor influencing consumers' perceived autonomy. On contrast, time is considered to be the most valuable resource that consumers invest while participating in co-production activities (Etgar, 2008). Therefore, when individuals are allowed to apportion time to a selected task it should be considered to be a meaningful choice (Williams et al., 2016) that allows individuals to control the initiation and regulation of their behaviour (Reeve et al., 2003). Thus, I propose:

> **H11:** Co-production platforms that provide choice in pace will have a stronger positive impact on consumers' perceived autonomy, when compared to choice in method.

2.6 Research Design and Methodology

2.6.1 Design

To examine and analyse the proposed hypothesis in Study 2, I re-designed the hypothetical co-production website 'Tops 'n' Tees'. The hypothesis is tested using a 2 (choice in method: yes vs no) x 2 (choice in pace: yes vs no) between-subject design.

2.6.2 Independent Variables

For *method*, participants could select the order of the steps required to design the t-shirt (see Appendix 10) (e.g., participants could decide to insert the graphics before selecting the colours, then choose to design the pocket and finally add any text). In the *restricted method*, participants did not see the prompt for arranging the step order of the activity (see Appendix 10). Instead, participants were given a pre-selected order of steps determined by the experimenter. For *pace*, participants had no restrictions on the amount of time they spent designing their t-shirt. In the *restricted pace,* participants were given a pre-selected time of 10 minutes to work on the t-shirt design activity (see Appendix 10).

2.6.3 Pre-Test

Participants for Pre-Test

A pre-test was conducted to check the manipulations of the types of choices on the design website. For the pre-test, I recruited participants from AMTURK (n = 127). Subjects were offered $0.40 as an incentive to participate in an online survey administered through Qualtrics. The screening criteria for the participants were that they should be above 18 years of age, live in North America, and use a computer or laptop to answer the survey. The typical participant was a 30-to-34-year-old Caucasian male, with an undergraduate degree and earning $50,000–$69,999 per annum.

Procedure and Scales for Pre-Test

The procedure I followed for the pre-test was the same as Study 1. Participants were randomly assigned to one of the four experimental conditions of the t-shirt design platform where they created a t-shirt using the customisation tool. After designing a t-shirt, participants recorded their responses about the choices in method and pace they felt they had in the design activity.

To measure perceived choice in method, a 7-point, 3-item Likert scale, inspired by Patall et al. (2013) and Assor et al. (2002), was used, where 1 = Not at all true, and 7 = Very true. To measure perceived choice in pace, a 7-point, 3-item Likert scale, inspired by Patall et al. (2013) and Assor et al. (2002) was used, where 1 = Not at all true, and 7 = Very true (see original and adapted items used for pre-test in Appendix 11).

Pre-Test Results

For the choice in method, independent sample *t*-tests revealed a significant difference between participants' felt choice in method (M = 6.40; SD = 0.88) and choice in pace (M = 5.75; SD = 1.36); $t_{(125)}$= 3.215; $p < 0.01$. For perceived choice in pace, independent sample *t*-tests revealed that there was a significant difference between participants' felt choice in pace (M = 6.27; SD = 1.03) and choice in method (M = 4.56; SD = 1.56); $t_{(125)}$= 7.30; $p < 0.01$. As expected, participants in the choice in pace condition had higher mean scores in perceived choice in pace than participants who were provided choice in method.

2.6.4 Main Study

Participant and Procedure

An initial sample of 213 undergraduate students participated in this study in exchange for one course credit. I cleaned the data by deleting 11 cases, as they were flagged as speeders (participants who finished faster than 1/3 of the median length of the survey). A further 16 cases were deleted due to respondents failing the attention test. As a part of data evaluation, I examined the data for univariate outliers but there were none that exceeded standardised values of ± 3.3 on any variable (Hair et al., 2006). Following data cleaning, 186 students remained in the study for analysis.

The online survey was administered through Qualtrics. The screening criteria for the participants remained the same as Study 1. The participant profile is given in Appendix 12.

The typical participant was an 18–25 year-old Asian female, with a high school diploma and earning less than $20,000 per annum.

The procedure I followed for the main study was the same as Study 1. Participants were randomly assigned to one of the four experimental conditions of the t-shirt design platform where they created a t-shirt using the customisation tool. After designing a t-shirt, participants recorded their perceptions of autonomy. I also included manipulation check scales where participants recorded their responses on the choice in method and choice in pace they felt they had in the activity. Finally, all participants answered a few questions about themselves. All participants were asked an attention-test question such as 'please click on "very true"'.

2.7 Results

2.7.1 Manipulation Check

For perceived choice in method, independent sample *t*-tests revealed a significant difference between participants' felt choice in method (M = 6.11; SD = 1.22) and choice in pace (M = 4.51; SD = 1.61); $t_{(184)}$= -7.62; $p < 0.01$. As expected, participants in the method choice condition had higher mean scores in perceived choice in method compared to participants who had pace choice.

For perceived choice in pace, independent sample *t*-tests revealed a significant difference between participants' felt choice in pace (M = 6.21, SD = 1.51) and choice in method (M = 4.66, SD = 1.05); $t_{(184)}$= -8.21; $p < 0.01$. As expected, participants in the pace condition had higher mean scores in perceived choice in pace compared to participants who were exposed to method conditions.

2.7.2 Main Study Results

The reliability of the perceived autonomy scale exceeded the acceptable threshold of 0.7 for established measures (Nunnally, 1978) (α= 0.91). A 2 (choice in method) x 2 (choice in pace) ANOVA revealed a significant main effect of choice in pace on perceived autonomy ($F_{(1, 185)}$ = 17.56; $p < 0.01$; $\eta_p^2 = 0.09$; $MS_{\text{choice in pace}} = 20.63$). The 2 (choice in method) x 2 (choice in pace) ANOVA did not reveal a significant main effect of choice in method on perceived autonomy ($F_{(1, 185)} = 0.77$; $p = 0.38$; $\eta_p^2 = 0.00$; $MS_{\text{choice in method}} = 0.91$). Planned contrasts revealed that perceived autonomy was significantly higher in choice in pace (M = 5.05, SE = 0.14) compared to choice in method conditions (M = 4.52, SE = 0.17; $t_{(182)} = 2.35$; $p = 0.43$) (see Table 13), supporting H11.

Table 13. Descriptives for perceived autonomy by choice – Study 2

Choice	*M*	*SD*	CIs
Choice in Method (N = 45)	4.52	1.21	(4.16 – 4.8)
Choice in Pace (N = 49)	5.05	1.02	(4.76– 5.35)

Note: CI = 95% Confidence Intervals

Study 3 – Types of Intrinsic Rationales

2.8 Hypothesis Development

In Study 1, I found that intrinsic rationales have a stronger influence on perceived autonomy when compared to extrinsic rationales. Given this finding was based on a personal development intrinsic rationale, it is useful to understand whether there is a difference according to the type

of intrinsic rationale used. Roberts et al. (2013) identify the two common types of intrinsic values that consumers perceive to be present in co-production activities: (1) hedonic desire for a better product and (2) the need to develop the consumer's own personal competencies and skills. Therefore, Study 3 set out to understand the influences of two different types of intrinsic rationales (i.e., hedonic and personal development).

Hedonic value is the pleasure one derives while consuming an experience (Holbrook, 2006), such as the co-production activity itself. Roberts et al. (2013) assert that designing content in co-production platforms can be fun or exciting to participants, and such enjoyment and positive stimulation provides consumers with an opportunity to forget about the worries of everyday life. This finding is consistent with the premise of experiential consumption research (Arnould & Thompson, 2005), which asserts that hedonic pursuit, or experiencing pleasure in an activity, is considered intrinsically rewarding (Yim et al., 2012).

Personal development need refers to an "individual's egocentric goals of pursuing personal growth and development, experiencing stimulating challenges and accomplishing set goals" (Roberts et al., 2013, p. 152). Consistent with goal-based theory, personal development need is oriented toward self-advancement (Roberts et al., 2013). Personal development need operates as a motivator to fulfil individuals' need to feel competent, be in control of their accomplishments (Roberts et al., 2013), improve their skills and gain additional knowledge (Etgar, 2008).

I argue that hedonic rationales have a stronger influence on perceived autonomy compared to personal development rationales. When an individual is trying to satisfy a personal development need, it could give rise to internal pressures such as ego-involvement, which is a self-evaluative state (Nicholls, 1984). Ryan et al. (1991) highlight ego-involvement as a means-end orientation toward an activity that can put people 'on trial' with themselves, undermining intrinsic motivation (Ryan 1982). Therefore, I propose:

H12: Co-production platforms that provide consumers with hedonic rationales will have a stronger positive impact on consumers' perceived autonomy, when compared to personal development rationales.

2.9 Research Design and Methodology

2.9.1 Design

To examine and analyse the proposed hypothesis, I re-designed the hypothetical co-production website 'Tops 'n' Tees'. The hypothesis is tested using a single factor (hedonic rationale vs personal development rationale) between subject experimental design.

2.9.2 Stimuli

Rationale was provided to the subjects when they entered the platform. Participants in the *hedonic rationale* condition received a message stating 'This design contest provides you with an opportunity to have fun while designing a unique t-shirt'. Participants in the *personal development rationale* received a message stating 'This design contest provides you with an opportunity to develop your inner creativity while designing a unique t-shirt'.

2.9.3 Pre-Test

Participants for Pre-Test

A pre-test was conducted to check the manipulations of hedonic rationale and personal development rationale on the t-shirt design website. I recruited participants from AMTURK (*n* =57), unrelated to the main study sample. Subjects were offered $0.40 as an incentive to participate in an online survey administered through Qualtrics. The screening criteria for the participants were that they should be above 18 years of age, live in North America, and use a

computer or laptop to answer the survey. The typical participant was a 25-to-29-year-old Caucasian male, with an undergraduate degree and earning $20,000–$29,999 per annum.

Procedure and Scales for Pre-Test

The procedure I followed for the pre-test was the same as Study 1. Participants were randomly assigned to one of the two experimental conditions of the t-shirt design platform (see Appendix 13). After designing a t-shirt, participants were asked whether they could recall if they were provided a rationale to participate in the t-shirt design. If participants clicked yes, they were then shown one of two statements: (1) 'The reason given to me for participation was to have fun while designing a unique t-shirt' (yes/no), and (2) 'The reason given to me for participation was to experience stimulating challenges while designing a unique t-shirt' (yes/no).

Pre-Test Results

I ran cross-tabs with Pearson's chi-squared test to examine whether participants recognised the rationale that was provided to them. The results indicate that the majority of participants could correctly recall the type of rationale they were given; 78.6% of the participants recognised the hedonic rationale ($\chi^2 = 16.88$; $p < .01$) and 89.7% of the participants recognised the personal development rationale ($\chi^2 = 24.43$; $p < .01$).

2.9.4 Main Study

Participants and Procedure

An initial sample of 121 undergraduate students participated in this study in exchange for one course credit. I cleaned the data by deleting five cases flagged as speeders. An additional 12 cases were deleted due to respondents failing the attention test. I also examined the data for univariate outliers; however, I did not find any cases that exceeded the recommended

standardised value of ± 3.3 (Hair et al., 2006). Following data cleaning, 104 responses remained for analysis.

The online survey was administered through Qualtrics. The screening criteria for the participants remained the same as Study 1. The participant profile for Study 3 is given in a table in Appendix 14. The typical participant was an 18-to-25 year-old Asian female, with a high school diploma and earning below $20,000 per annum.

The procedure I followed for the main study was the same as Study 1. Participants were randomly assigned to one of the two experimental conditions of the t-shirt design platform where they created a t-shirt using the customisation tool. After designing a t-shirt, participants recorded their perceptions of autonomy. I included manipulation checks for recognition of the type of rationale given (i.e., hedonic and personal development rationale). Demographic information was also collected. All participants were asked an attention-test question such as 'please click on "very true"'.

2.10 Results

2.10.1 Manipulation Check

A Pearson chi-squared test revealed that 75.5% of the participants who were exposed to the hedonic rationale condition recognised the rationale provided to them ($\chi^2 = 24.01$; $p < .01$). A second Pearson chi-squared test for personal development rationale showed that 80.4% of the participants who were exposed to the extrinsic rationale condition recognised the rationale provided to them ($\chi^2 = 30.39$; $p < .01$). These results indicate that the majority of participants can correctly recall the type of rationale provided. As the manipulation checks were successful, I proceeded to test the hypotheses for the main study.

2.10.2 Main Study Results

The reliability of the perceived autonomy scale exceeded the acceptable threshold of 0.7 for all established measures (Nunnally, 1978) (α= 0.93). A one-way ANOVA revealed a main effect of intrinsic rationale on perceived autonomy ($F_{(1, 103)} = 5.45$; $p < 0.05$; $MS_{\text{intrinsic rationale}} = 8.77$). Consistent with H12, planned contrasts showed that perceived autonomy was significantly higher in hedonic rationale conditions (M = 5.45, SE = 0.14) compared to personal development rationale conditions (M = 4.87, SE = 0.21; $t_{(102)} = 2.32$; $p < 0.05$).

Study 4 – Types of Extrinsic Rationales

2.11 Hypothesis Development

Extrinsic rationales provided by organisations express some performance-contingent rewards of participating. Although in Study 1 I found that intrinsic rationales have a stronger influence on perceived autonomy than extrinsic rationales, I was interested in whether there was a difference in perceptions of autonomy across different types of extrinsic rationales. Two common types of extrinsic rationales given in co-production platforms include: (1) recognition, and (2) personal economic benefits in the form of monetary rewards (Roberts et al., 2013).

Recognition rationale – Consumers often participate in co-production activities for ego gratification motives, such as reputation and fame (Roberts et al., 2013). For instance, Ogawa and Piller (2006) surveyed individuals who had participated in Threadless designs and found that only 5% of the users were buying the t-shirts. Consumers participate in online co-production platforms to become visible and to get recognition from the company, as well as from other participants in the platform (Fuller, 2006). This is facilitated by having their created designs displayed on the co-production website for all to view. Recognition at such co-

production platforms can provide participants possible career opportunities within the firm as they become visible beyond their local boundaries (Fuller, 2006).

Monetary Rationale- Firms largely use financial incentives to motivate consumers to participate in contests and new product development activities (Zhao & Zhu, 2014). These incentives are often performance-contingent and can include prizes, bonus points, give-aways, or monetary payments offered by the organisation (Fuller, 2006). It is found that the more time and effort consumers invest in co-production platforms, the stronger their need for monetary compensation will be (Von Hippel, 2002). The reverse is also true: participants work harder in order to get expected rewards such as monetary compensation (Zhao & Zhu, 2014).

When consumers are given an extrinsic rationale, they perceive their behaviour to be controlled or regulated by an external reason/reward. This can give rise to an external locus (Deci & Ryan, 2000). Notwithstanding this, I propose that, since a recognition rationale can offer long-term opportunities within co-production platforms, such as employment (Zhao & Zhu, 2014), it allows individuals to internalise this externally provided incentive. Ricoeur (1966) posited that self-determined acts are defined as those endorsed by the self and in accordance with abiding values and interest. Monetary rationales often deliver immediate benefit in terms of a payoff or prize; therefore, behaviours are performed purely to obtain an externally imposed reward. Therefore, I propose:

> **H13:** Co-production platforms that provide consumers with fame rationales will have a stronger positive impact on consumers' perceived autonomy, when compared to monetary rationales.

2.12 Research Design and Methodology

2.12.1 Design

To examine and analyse the proposed hypothesis, I re-designed the hypothetical co-production website 'Tops 'n' Tees'. The hypothesis is tested using a single factor (recognition rationale vs monetary rationale) between subject experimental design.

2.12.2 Stimuli

A rationale was provided to the subjects when they entered the platform. Participants in the *recognition rationale* condition received a message stating 'this design contest provides you with an opportunity to be recognised amongst your peers for designing a unique t-shirt'. Participants in the *monetary rationale* received a message stating 'this design contest provides you with an opportunity to win a $50 cash reward for designing a unique t-shirt'.

2.12.3 Pre-Test

Participants for Pre-Test

A pre-test was conducted to check the manipulations of recognition rationale and monetary rationale on the t-shirt design website. For the pre-test, I recruited participants from AMTURK (n=62), unrelated to the main study sample. Subjects were offered $0.40 as an incentive to participate in an online survey administered through Qualtrics. The screening criteria for participants were that they should be above 18 years of age, live in North America, and use a computer or laptop to answer the survey. The typical participant was a 30-to-34-year-old Caucasian female, with an undergraduate degree and earning below $20,000 per annum.

Procedure and Scales for Pre-Test

The procedure I followed for the pre-test was the same as Study 1. Participants were randomly assigned to one of the two experimental conditions of the t-shirt design platform, where they

created a t-shirt using the customisation tool. After designing a t-shirt, participants were asked if they could recall whether they were provided a rationale on the website to participate in the t-shirt design. If participants answered yes, they were shown two statements, (1) 'The reason given to me for participation was to be recognised as a famous designer for designing a unique t-shirt' (yes/no), and (2) 'The reason given to me for participation was to win a $50 cash reward for designing a unique t-shirt', yes/no.

Pre-Test Results

I ran cross-tabs with Pearson's chi-squared test to examine whether participants recognised the type of extrinsic rationale provided to them. The findings showed that the majority of participants could correctly recall the type of rationale they were given; 91.7% of the participants acknowledged the recognition rationale ($\chi^2 = 16.65$; $p < .01$) and 85.7% of the participants recognised the monetary rationale ($\chi^2 = 42.82$; $p < .01$).

2.12.4 Main Study

Participants and Procedure

An initial sample of 99 undergraduate students participated in this study in exchange for one course credit. I cleaned the data by deleting six cases flagged as speeders. A further eight cases were deleted due to respondents failing the attention test. I examined the data for univariate outliers; however, I did not find any cases that exceeded the recommended standardised values of ± 3.3 (Hair et al., 2006). Following data cleaning, a total of 84 responses remained for analysis.

The online survey was administered through Qualtrics. The screening criteria for the participants were that they should be above 18 years of age and use a computer or laptop to answer the survey. The participant profile is given in a table in Appendix 16. The typical participant was an 18-to-25 year-old Asian female, with a high school diploma and earning below $20,000 per annum.

The procedure I followed for the main study was the same as Study 1. Participants were randomly assigned to one of the two experimental conditions of the t-shirt design platform where they created a t-shirt using the customisation tool. After designing a t-shirt, participants recorded their perceptions of autonomy. I included manipulation checks for identification of the type of rationale given (i.e., recognition and monetary rationale). Demographic information was also collected. All participants were asked an attention-test question such as 'please click on "very true"'.

2.13 Results

2.13.1 Manipulation Check

The Pearson chi-squared test revealed that 82.1% of the participants who were exposed to the recognition rationale condition documented the rationale that was provided to them ($\chi^2 = 13.78$; $p < .01$). A Pearson chi-squared test for monetary rationale showed that 72.2% of the participants who were exposed to the extrinsic rationale condition correctly recalled the rationale that was provided to them ($\chi^2 = 16.85$; $p < .01$). As expected, a majority of participants could correctly recognise the type of rationale they were given.

2.13.2 Main Study Results

The reliability of perceived autonomy scale ($\alpha = 0.88$) exceeded the acceptable threshold (Nunnally, 1978). A one-way ANOVA did not reveal a main effect of extrinsic rationale on perceived autonomy ($F_{(1, 83)} = 0.29$; $p = 0.59$; $MS_{\text{extrinsic rationale}} = 0.36$), refuting H13. Planned contrasts show that there was no significant difference between participants' perceptions of autonomy in recognition rationale conditions ($M = 4.76$, SE = 0.15) compared to monetary rationale conditions ($M = 4.63$, SE = .18); $t_{(82)} = 0.54$, $p = 0.59$.

Study 5 – Source of perspective-taking

2.14 Hypothesis Development

Perspective-taking as a support factor is commonly used in situations to reduce negative feelings. Negative emotions may arise due to not performing a task well (Reeve et al., 2003) or not feeling comfortable with the task at hand due to unfamiliarity (Koestner et al., 1984). Previous studies have compared the presence vs absence of perspective-taking within an activity on perceived autonomy and have shown mixed findings (Koestner et al., 1984; Assor et al., 2002). In Study 1, I found that HPT brand communities have a stronger influence on perceived autonomy than LPT brand communities.

In the autonomy support literature to date, perspective has always been undertaken by the support provider. For instance, in education studies the teacher undertakes the perspective of students in a classroom (for example see Reeve & Jang, 2006; Assor et al., 2002). Similarly, in organisation studies, the supervisor undertakes the perspective of subordinates within a workplace (for example see Deci et al., 2001; Baard et al., 2004). However, when customers face problems they often turn to their peers for support (Rosenbaum & Massiah, 2007) rather than the designated support provider. Consequently, within co-production platforms customers' negative feelings can be acknowledged not only by the organisation, but also by user-generated content provided by other customers. It is unknown how the source of the perspective-taking affects perceptions of autonomy. Therefore, in this study, I aim to understand whether the source of perspective-taking (i.e., organisation vs peers) can have an influence on perceived autonomy.

Organisation brand communities are discussion forums where organisation representatives reply to queries or concerns customers may have about the co-production platform, the activity, or the process of participation. *Customer brand communities* are

discussion forums where other customers (i.e., peers) respond to any queries or concerns customers may have about the co-production platform, the activity, or the process of participation. I contend that when consumers are provided with an avenue to express their negative feelings to the organisation brand community, they are interacting with the organisation individually and independently from other customers. Consequently, they feel the organisation has control over the communication (Mangold & Faulds, 2009), which reduces their perception of autonomy.

Perspective-taking creates an empathetic atmosphere, which helps to alleviate the inner tensions and pressures and legitimise the individual's feelings (Koestner et al., 1984). Studies show that empathy is strongest between people who share similar experiences (Ickes, 1993; Eisenberg & Strayer, 1987). Preece and Maloney-Krichmar (2003) highlight that this is particularly noticeable in in-patient support communities. Thus, I extend this understanding to a customer brand community. Given that most customers would have faced similar situations in co-production platforms (Franke, Keinz & Schreier, 2008), they are more likely to create an empathetic atmosphere for other customers experiencing problems. Autonomy is truly felt when the inner tension disappears (Koestner et al., 1984). Therefore, I propose:

> **H14:** Co-production websites that have a customer brand community will have a stronger positive impact on consumers' perceived autonomy, when compared to websites that have an organisation brand community.

2.15 Research Design and Methodology

2.15.1 Design

To examine and analyse the proposed hypothesis, I re-designed the hypothetical co-production website 'Tops 'n' Tees'. The hypothesis is tested using a single factor (customer brand community vs organisation brand community) between subject experimental design.

2.15.2 Independent Variables

I simulated two brand communities on the website. The perspective-taking statements on both brand communities remained the same; only the source of perspective-taking was changed, one having customers performing the function of perspective-taker and one other having an organisation representative as the perspective-taker (see Appendix 17 for the perspective-taking manipulations). The brand communities appeared after the consumers designed the t-shirt and the participants were asked to read the brand community reviews carefully.

2.15.3 Pre-Test

Participants for Pre-Test

Participants were recruited from AMTURK (n = 62), unrelated to the main study sample. Subjects were offered $0.40 as an incentive to participate in an online survey administered through Qualtrics. The screening criteria for the participants were that they should be above 18 years of age, live in North America, and be using a computer or laptop to answer the survey. The typical participant was a 30-to-34-year-old Caucasian male, with an undergraduate degree and earning $70,000–$79,999 per annum.

Procedure and Scales for Pre-Test

The procedure followed for the pre-test was the same as in Study 1. Participants were randomly assigned to one of the two experimental conditions (see Appendix 17) of the t-shirt design platform where they created a t-shirt using the customisation tool. After designing a t-shirt, participants were asked if they could access a brand community on the t-shirt design website. Participants who answered yes were further asked whether the responses on the brand community page were written by other customers or by organisation representatives. Then, participants went onto record their responses about the degree of perspective-taking in the brand community.

To measure whether participants recalled the presence of a brand community, they were asked to reply yes/no to the statement, 'I was shown a brand community forum on the Tops 'n' Tees website'. If they answered yes, they were then shown two recognition statements: for the customer brand community, 'The responses to the comments on the brand community were written by other customers' (yes/no), and for the organisation brand community, 'The responses to the comments on the brand community were written by Tops 'n' Tees representatives' (yes/no).

To measure the degree of perspective-taking in the statements elicited, a 7-point, 4-item scale was used, adapted from Patall et al. (2013) where 1 = Not at all true, and 7 = Very true (see original and adapted items used for pre-test in Appendix 5).

Pre-Test Results

I ran cross-tabs with Pearson's chi-squared test to examine whether participants recognised the source of perspective-taking in the brand community. The analysis revealed that 75.0% of the participants who were exposed to the customer brand community condition recognised that other customers responded to comments/queries on the brand community forum ($\chi^2 = 6.45$; $p < .05$), and 70.0% of participants who were exposed to the organisation brand community condition recognised that Tops 'n' Tees representatives responded to comments/queries on the brand community forum ($\chi^2 = 9.30$; $p < .01$). Independent sample *t*-tests revealed a significant difference in customer autonomy between the customer brand communities ($M = 5.99$; $SD = 1.04$) and organisation brand communities ($M = 5.28$; $SD = 1.18$); $t_{(60)} = -2.51$; $p < 0.05$. As expected, a customer brand community offers higher perceptions of autonomy than that in an organisation brand community. As the manipulation checks were successful, I proceeded to use these websites for the main study.

2.15.4 Main Study

Participants and Measures

An initial sample of 112 undergraduate students participated in this study in exchange for one course credit. As a part of the data cleaning process I deleted four cases flagged as speeders. A further 13 cases were deleted due to respondents failing the attention test. I examined the data for univariate outliers; however, I did not find any cases that exceeded the recommended standardised values of ± 3.3 (Hair et al., 2006). Following data cleaning, a total of 95 responses remained for analysis.

The online survey was administered through Qualtrics. The screening criteria for participants were the same as for Study 1. The participant profile is given in a table in Appendix 18. The typical participant was an 18-to-24-year-old Asian female, with a high school diploma and earning below $20,000 per annum.

The procedure followed for the main study was the same as for Study 1. Participants were randomly assigned to one of the two experimental conditions of the t-shirt design platform, where they created a t-shirt using the customisation tool. After designing a t-shirt, participants recorded their perceptions of autonomy. I also included the manipulation check scales from the pre-test study for recall and recognition and for the degree of perspective-taking felt in the brand community.

2.16 Results

2.16.1 Manipulation Check

Pearson's chi-squared test revealed that 97.9% of the participants who were exposed to the customer brand community condition recognised that other customers responded to comments/queries on the brand community forum ($\chi^2 = 60.98$; $p < .01$). A second Pearson's chi-squared test for organisation brand community showed that 83.3% of the participants who

were exposed to the organisation brand community condition recognised that Tops 'n' Tees representatives responded to comments/queries on the forum ($\chi^2 = 41.77$; $p < .01$). These results indicate that participants could recognise the source of perspective-taking in the brand community forum. For the degree of perspective-taking, independent sample *t*-tests revealed that there was a significant difference between customer brand communities ($M = 5.85$; $SD = 0.86$) and organisation brand communities ($M = 5.08$; $SD = 0.81$) $t_{(60)} = -2.51$; $p < 0.05$. As expected, results suggest that consumers felt a higher degree of perspective-taking in the customer brand community compared to the organisation brand community. As the manipulation checks were successful, I proceeded to use these websites for the main study to test the hypotheses.

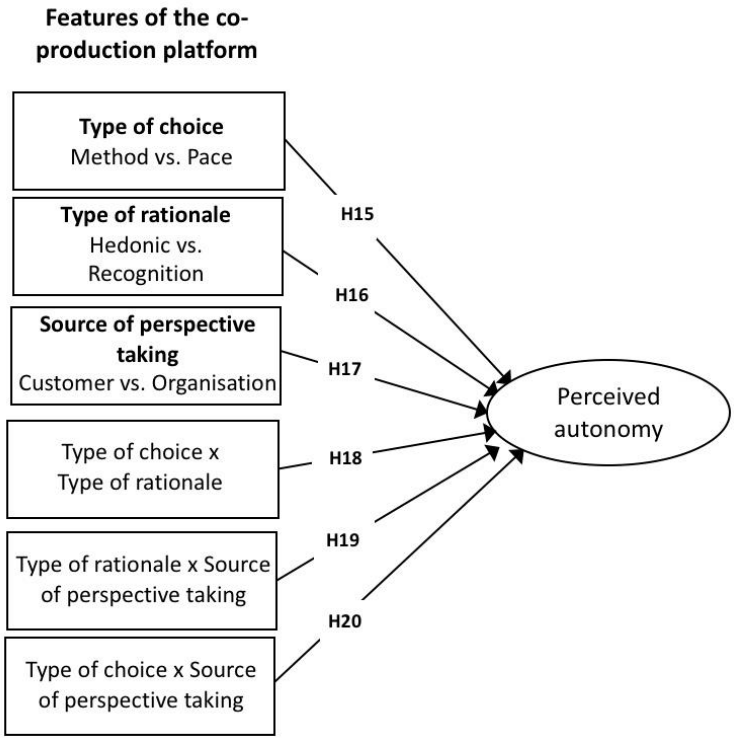
2.16.2 Main Study Results

The reliability of perceived autonomy scale ($\alpha = 0.88$) exceeded the acceptable threshold (Nunnally, 1978). A one-way ANOVA revealed a main effect of perspective taking on perceived autonomy ($F_{(1, 94)} = 5.06$; $p < 0.05$; $MS_{\text{perspective taking}} = 5.73$). Consistent with H14, planned contrasts showed that perceived autonomy was significantly higher in customer brand community conditions ($M = 4.87$, SE = 0.15) compared to organisation brand community conditions ($M = 4.37$, SE = 0.16; $t_{(93)} = 2.25$; $p < 0.05$).

Study 6

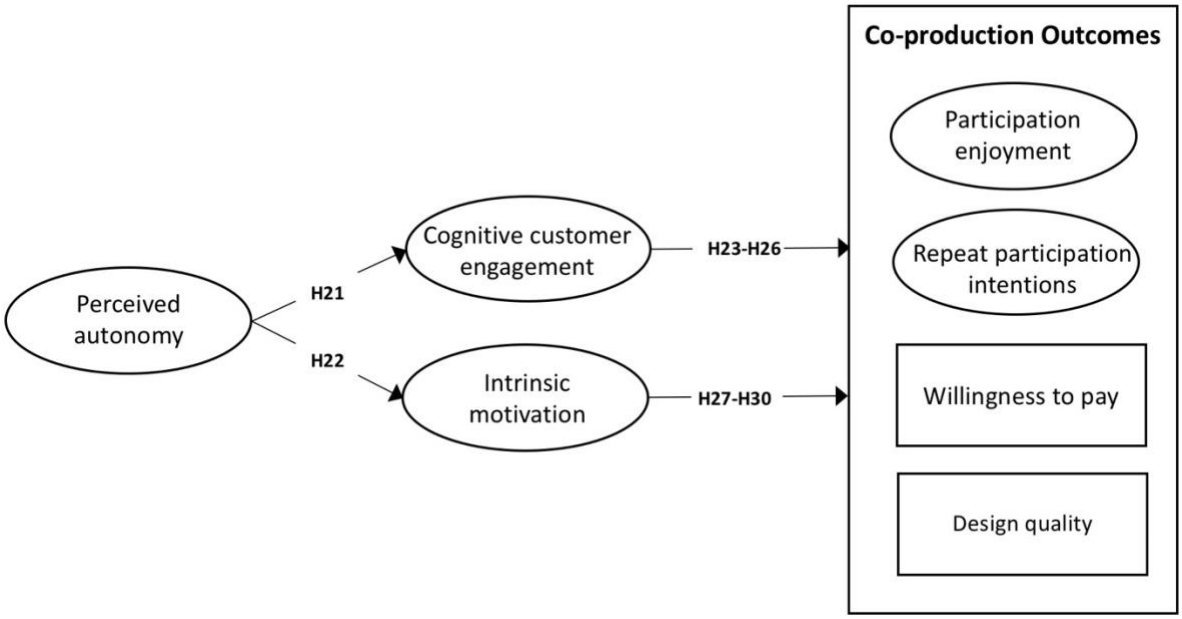
Study 6 was conducted in order to understand whether there are any interaction effects between the IVs tested individually in the preceding studies (studies 2, 3, 4 and 5) (see Figure 17).

Figure 17. Influence of features of co-production platform on perceived autonomy – Study 6



In this study, I also tested an additional mediator to intrinsic motivation–cognitive customer engagement. Engaged consumers are found to be loyal towards organisations (Hollebeek, 2011) and engaged employees are found to be more energetic and able to meet the demands of their job (Schaufeli, Salanova, González-Romá & Bakker, 2002). Given that engaged customers are beneficial for organisations (Hollebeek, Glynn & Brodie, 2014) and autonomy support is found to facilitate engagement (Reeve, 2012), I examine whether cognitive customer engagement can explain the influence of perceived autonomy on organisation outcomes such as enjoyment, repeat participation intentions, and willingness to pay. I also tested a new consequence of perceived design quality from the consumers' perspective, as this is of interest to both the organisation and the customer when undertaking co-production activities (Troye & Supphellen, 2012) (see Figure 18).

Figure 18. SEM with cognitive customer engagement and intrinsic motivation as mediators



2.17 Hypotheses Development

Since I have already argued the main effects of the IVs (**H15–H17**) in previous studies, I propose the following interaction effects between the IVs.

Two way-interaction effects

2.17.1 Type of choice x Type of rationale

Study 2 predicts that choice in pace has a greater positive influence on perceived autonomy than choice in method. I expect the type of rationale (hedonic vs recognition) to moderate this effect. More specifically, I propose that, under choice in pace conditions, perceived autonomy will be greater when hedonic versus recognition rationale is given, but this difference will not be significant under choice in method conditions.

When choice in pace and a hedonic rationale is provided, consumers have an opportunity to work free from any external constraints, while having an opportunity to spend as much time as they like on the co-production activity. Time is a valuable consumer resource (Etgar, 2008).

Decisions about how to apportion time to a selected task is considered to be a meaningful choice (Williams et al., 2016) and choices that are considered meaningful enhance an individual's perceived autonomy (Williams, 1998). Moreover, hedonic rationales provide consumers with positive stimulation and an opportunity to forget about the worries of everyday life, allowing them to experience pleasure (Yim et al., 2012), thereby enhancing perceived autonomy. I predict an interaction between choice and rationale such that, when choice in pace and hedonic rationale are present in the same co-production platform, the two conditions are likely to have a positive synergy.

When choice in pace is provided, consumers can decide the amount of time they would like to spend on the activity. However, when consumers are given a recognition rationale, they are working towards achieving fame, which can enhance pressure on the consumers to attain a specific outcome (i.e., become famous or win the contest). Such external pressures may make the locus of causality an external one (Shalley & Perry-Smith, 2001), reducing perceived autonomy. When choice in method is provided with a hedonic rationale, it allows consumers to participate in the co-production activity purely for fun. However, instances that allow individuals to organise their environment provide them with little opportunity to making meaningful choices (Stefanou et al., 2004) and if choices are not considered meaningful they do not enhance perceived autonomy (Williams, 1998). Since choice in method only allows consumers to organise their order of co-production activity, these choices will not enhance an individual's autonomy. In either of these two cases, relaxing one of the two conditions (i.e., recognition rationale or choice in method) should enhance perceived autonomy.

When choice in method and recognition rationale are present simultaneously, there is likely to be a negative influence on autonomy compared to the other three conditions. Choice in method provides little opportunity for making meaningful choices (Stefanou et al., 2004) and recognition rationale gives rise to an external locus, reducing perceived autonomy.

Therefore, I hypothesise a two-way interaction among type of choice and type of rationale on perceived autonomy, such that:

> **H18:** Under choice in pace conditions, perceived autonomy will be greater when hedonic versus recognition rationale is given, but this difference will not be significant under choice in method conditions.

2.17.2 Types of rationale x Source of perspective-taking

Study 1 showed that, under intrinsic rationale conditions, perceived autonomy will be greater when consumers are exposed to HPT brand communities versus LPT brand communities; however, this difference was not significant under extrinsic rationale conditions. In Study 1, the intrinsic rationale studied was personal development, and the extrinsic rationale studied was monetary rationale. In this study, however, I examine a hedonic rationale (a type of intrinsic rationale) and recognition rationale (a type of extrinsic rationale). I expect the source of perspective-taking to moderate this effect, as well.

When consumers are given a hedonic rationale, they are working free of any external constraints (Roberts et al., 2013); thus enhancing their experience of psychological freedom. In addition, customer brand communities provide them with an avenue to discuss problems or to ask questions of other consumers who are working within the co-production platforms (Rosenbaum & Massiah, 2007); thus enhancing their perceptions of empathy and, in turn, their perceived autonomy. I predict an interaction between rationale and source of perspective-taking, such that when hedonic rationale and customer brand communities are present simultaneously the two conditions are likely to have a positive synergy when they are active together.

When consumers are given a hedonic rationale and are exposed to organisation brand communities, they have the opportunity to work purely for a hedonic pursuit, enhancing their perceived autonomy. In online brand communities, the consumer wants to be in control

(Constantinides & Fountain, 2008). But if the community is run by the organisation, consumers perceive the organisation as retaining control over the communication (Mangold & Faulds, 2009), which in turn reduces their perception of autonomy. When consumers are given a recognition rationale and are exposed to a customer brand community, they have the opportunity to reach out to customers who share similar experiences, enhancing the felt empathy (Preece & Maloney-Krichmar, 2003) and in turn enhancing their perception of autonomy (Koestner et al., 1984). However, when consumers work for a recognition rationale they are working for an external incentive, giving rise to an external locus (Deci & Ryan, 2000) and thus reducing their perceived autonomy. In either of these two cases, relaxing one of the two conditions (i.e., recognition rationale or organisation brand community) should enhance perceived autonomy.

When consumers are given a recognition rationale and are exposed to an organisation brand community, there is likely to be a negative influence on autonomy compared to the other three conditions. Recognition rationale gives rise to an external locus (Deci & Ryan, 2000) and organisation brand community retains control over the communication exchanged (Mangold & Faulds, 2009), in turn reducing perceived autonomy. Therefore, I hypothesise a two-way interaction among type of rationale and source of perspective-taking on perceived autonomy, such that:

> **H19:** Under hedonic rationale conditions, perceived autonomy will be greater when consumers are exposed to customer brand communities versus organisation brand communities, but this difference will not be significant under recognition rationale conditions.

2.17.3 Types of choice x Source of perspective-taking

Study 2 found that choice in pace has a greater positive influence on perceived autonomy than

choice in method. I expect the source of perspective-taking in the brand community (organisation vs customer) to moderate this effect. More specifically, I propose that, under choice in pace conditions, perceived autonomy will be greater when consumers are exposed to consumer brand community versus organisation brand community, but that this difference will not be significant under choice in method conditions.

When choice in pace is provided and consumers are exposed to customer brand communities, they have an opportunity to spend as much time as they like on the co-production activity, and allowing consumers to make decisions on how to allocate their time in an activity is considered to be a meaningful choice (Williams et al., 2016) that allows individuals to regulate their behaviour within the activity (Reeve et al., 2003). Customer brand communities create an empathetic atmosphere, allowing consumers to feel psychologically safe in the co-production environment. Williams et al. (2016) found that when students feel psychologically safe in the learning setting, it allows them to make important decisions about their classroom experience (such as, how to design and carry out tasks), which in turn allows them to self-regulate their behaviour. Therefore, I predict an interaction between choice and perspective-taking such that, when choice in pace and customer brand communities are present simultaneously, the two conditions are likely to have a positive synergy.

When choice in pace is provided within an organisation brand community, consumers can decide the amount of time they would like to spend on the activity, enhancing perceived autonomy (Reeve et al., 2003). However, the organisation brand community consumers perceive the organisation has having control over the communication (Mangold & Faulds, 2009), thereby reducing their perceptions of autonomy. When choice in method is provided within a customer brand community, consumers can reach out to other consumers within the brand community, thus enhancing their perceived autonomy. However, choice in method, which allows consumers to organise the co-production environment, provides little opportunity

to make meaningful choices (Stefanou et al., 2004) and such choices do not enhance an individual's autonomy (Williams, 1998). In either of these two cases, relaxing one of the two conditions (i.e., organisation brand community or choice in method) should enhance perceived autonomy.

When choice in method and recognition rationale are present simultaneously, there is likely to be a negative influence on autonomy compared to the other three conditions. Choice in method provides little opportunity for self-governance (Stefanou et al., 2004) and organisation brand community does not create an empathetic atmosphere, thereby reducing perceived autonomy. Therefore, I hypothesise a two-way interaction among type of choice and source of perspective-taking on perceived autonomy, such that:

> **H20:** Under choice in pace conditions, perceived autonomy will be greater when consumers are exposed to consumer brand community versus organisation brand community, but this difference will not be significant under choice in method conditions.

2.17.4 Alternative Mediator – Cognitive customer engagement

Customer engagement refers to "the level of customers' motivational, brand-related, and context-dependent state of mind characterised by specific levels of cognitive, emotional, and behavioural activity in brand interactions" (Hollebeek, 2011, p. 790). Customers exhibit engagement when they become physically involved in activities, either alone or with others; are cognitively focused, vigilant, and attentive; and are emotionally connected to activities (Kahn, 1992). The cognitive dimension of engagement, also known as absorption, is characterised by customers being fully engrossed and concentrated in the activity or brand. In this study, I focus only on the cognitive dimension of customer engagement because the emotional dimension of engagement is highly correlated with enjoyment (Calder, Malthouse & Schaedel, 2009) and participation enjoyment is one of the outcomes of interest in the study.

Kahn (1990) argues that aspects of the environment will influence the extent to which individuals are willing to invest their personal energy in their tasks. In accordance with this proposition, Reeve, Jang, Carrell, Jeon and Barch (2004) found that teachers' autonomy-supportive motivating styles in classrooms positively influence students' engagement. Extending this finding to co-production platforms, I propose that when consumers perceive autonomy while participating in an activity, it enhances their absorption within the activity. Therefore, I propose:

H21: Perceived autonomy will be positively associated with cognitive customer engagement.

I have already argued the influence of perceived autonomy on intrinsic motivation (**H22**) in Study 1.

2.18 Outcomes

2.18.1 Participation Enjoyment

Experiencing engagement in the work place has been found to be related to good health (Sonnentag, 2003). Furthermore, when employees are engaged in their workplace, they have a positive state of mind toward work (Schaufeli & Bakker, 2004) and have positive work affect (Sonnentag, 2003). Moreover, Yim et al. (2012) propose that customer participation activities create enjoyment when consumers invest their time and effort to participate in new experiences. Thus, I propose that when consumers are cognitively engaged, they have sustained attention and are absorbed in the co-production activity. Such sustained attention and absorption is likely to facilitate the flow experience of positive feelings and fun (Csikszentmihalyi, 1990). Thus, I propose:

H23a: Cognitive customer engagement is positively associated with enjoyment.

H23b: The relationship between perceived autonomy and participation enjoyment is mediated by cognitive customer engagement.

2.18.2 Repeat Participation Intentions

The experience of engagement is described as fulfilling (Sonnentag, 2003). Thus, Schaufeli and Bakker (2004) asserted that employees who are engaged in the workplace have a greater attachment to their organisation and a lower propensity to leave their organisation. Similarly, Saks (2006) found that organisational commitment and employee engagement are positively correlated. Commitment refers to an ongoing relationship with a specific other party (Morgan & Hunt, 1994). Extending this association to customer engagement, I propose that when a consumer has high cognitive engagement in the co-production activity, it influences their intentions to participate in co-production in the future. Thus, I propose:

H24a: Cognitive customer engagement is positively associated with repeat participation intentions.

H24b: The relationship between perceived autonomy and repeat participation intentions is mediated by cognitive customer engagement.

2.18.3 Willingness to Pay

Franke and Schreier (2010) found that the higher the perceived effort of self-designed products, the lower the consumers' willingness to pay a premium for that product. Schaufeli et al. (2002) reported that when a consumer is cognitively engaged in an activity they experience absorption. Being fully absorbed in an activity creates a state called flow, wherein consumers experience distortion of time, effortless concentration and loss of self-consciousness (Csikszentmihalyi, 1990). I argue that when consumers are highly engaged within the co-production activity, they

perceive their productive effort to be low, thereby enhancing their willingness to pay a premium for the co-produced product. Thus, I propose:

H25a: Cognitive customer engagement is positively associated with willingness to pay.

H25b: The relationship between perceived autonomy and willingness to pay is mediated by cognitive customer engagement.

2.18.4 Perceived Design Quality

Perceived design quality reflects the customer's appraisal of the product they created within the co-production platform (Joon Choi & Sik Kim, 2013). Troye and Supphellen (2012) found that self-production has a positive effect on outcome evaluation. I propose that, when consumers are cognitively engaged in a co-production activity, they positively evaluate the outcome. Christian, Garza and Slaughter (2011) highlight that engagement is an indicator of an employee's willingness to expend discretionary effort at work. Since consumers are considered to be partial employees in co-production platforms (Etgar, 2008), I propose that when consumers are engaged they expend discretionary effort while designing the product. Troye and Supphellen (2012) assert that in a co-production activity the product design quality is determined partially by the input provided by the platform and partly by the consumer's own productive effort. Consumers who are engaged will positively evaluate the design they co-produced because of the discretionary effort they expend in the activity. Formally stated:

H26a: Cognitive customer engagement is positively associated with perceived design quality.

H26b: The relationship between perceived autonomy and perceived design quality is mediated by cognitive customer engagement.

Since I have already argued the influence of perceived autonomy on outcomes (participation enjoyment, repeat participation intentions and willingness to pay) (**H27–H29)** mediated via intrinsic motivation in Study 1, I propose the following relationship between intrinsic motivation and perceived design quality.

Research has shown that students' motivation influences the expectation formed before enrolment, and their experience at university (Athiyaman, 1997; Bennett, 2004). Congruent with SDT, Chong and Ahmed (2012) found that when students are intrinsically motivated to participate in higher education program it has a positive influence on service quality evaluation of the university. I extend this finding to co-production platforms to propose that consumers who experience intrinsic motivation within the design activity will positively evaluate the product they design. Formally stated:

H30a: Intrinsic motivation is positively associated with perceived design quality.

H30b: The relationship between perceived autonomy and perceived design quality is mediated by intrinsic motivation.

2.19 Research Design and Methodology

2.19.1 Design

To examine and analyse the proposed conceptual model, I re-designed the hypothetical co-production website 'Tops 'n' Tees'. The hypotheses are tested using an experimental 2 (choice: method vs pace) × 2 (rationale: hedonic vs recognition) x 2 (source of perspective-taking: customer vs organisation) between-subject design.

2.19.2 Independent Variables

The choice in pace and choice in method manipulations from Study 2 were used. For manipulating hedonic rationale, I utilised the statement from Study 3. For manipulating

recognition rationale, I utilised the statement from Study 4. For perspective-taking, I utilised the brand communities from Study 5. Since I retained all previously tested independent variables, I did not conduct any additional manipulation checks.

2.19.3 Participants

In total, there were 348 responses collected from AMTURK. Participants were offered $2.00 as an incentive to participate in the online survey, which was administered through Qualtrics. I cleaned the data by deleting 12 cases flagged as speeders. I omitted an additional 29 cases due to respondents failing the attention test. I examined the data for univariate outliers but did not find any cases that exceeded the recommended standardised value of ± 3.3 (Hair et al., 2006). Following data cleaning, 304 participants remained in the study for analysis. The screening criteria for the participants remained the same as Study 1. The participant profile is given in a Table in Appendix 19. The typical participant was a 30-to-34-year-old Caucasian female, with an undergraduate degree, who was earning $20,000–$29,999 per annum.

The procedure I followed for this study was the same as that used in Study 1. Participants were randomly assigned to one of the eight experimental conditions of the t-shirt design platform, where they created a t-shirt using the customisation tool. After designing a t-shirt, participants recorded their responses on the mediators, outcomes, and control variables. I included manipulation checks for all independent variables. Demographic information was also collected. All participants were asked an attention-test question such as ‘please click on “very true”’.

2.19.4 Measures and Controls

In addition to the mediators and outcome variables used in Study 1, (see Appendix 20 for additional scales used, including original and adapted items), I used an 6-item measure adapted from (Rich, Lepine & Crawford, 2010) to measure cognitive customer engagement on a 7-point scale, where 1 = Not at all in agreement, and 7 = In complete agreement. T-shirt perceived

design quality was measured by one item: 'Overall, how would you rate the quality of the t-shirt you designed?', where 1 = Extremely poor, and 7 = Extremely good (Dong, Sivakumar, Evans & Zou, 2014). Participant demographic information was also collected.

I collected the same control variables as those in Study 1. In addition, in testing the effect of autonomy on engagement, I controlled for customer involvement, since an individual's level of involvement is found to be positively associated with his/her engagement (Hollebeek et al., 2014). Involvement was measured using a 6-item semantic differential, adapted from Zaichkowsky (1985).

2.20 Results

Prior to hypothesis testing, the reliability of all the measures was examined (see Table 14). Cronbach's alpha coefficients exceeded the acceptable threshold of 0.7 for all established measures (Nunnally, 1978). Means, standard deviations, and reliability measures for the total sample are presented in Table 14.

Table 14. Means, standard deviations and reliability of measures – Study 6

Variable	Mean *(M)*	Standard Deviation *(SD)*	Cronbach Alpha *(α)*
Mediators			
Perceived autonomy	5.25	1.25	0.95
Cognitive customer engagement	5.02	1.67	0.97
Dependent variables			
Participation enjoyment	5.53	1.33	0.97
Repeat participation intentions	5.11	1.66	0.96
Willingness to pay	$18.35	$12.19	-
Perceived design quality	5.02	1.54	-

2.20.1 Manipulation Check

For the choice in method, independent sample *t*-tests revealed a significant difference between participants' felt choice in method (M = 6.17; SD = 1.24) and choice in pace (M = 4.91; SD = 1.68); $t_{(302)}$= 7.46; $p < 0.01$. For the choice in pace, independent sample *t*-tests revealed a significant difference between participants' felt choice in pace (M = 6.20; SD = 1.42) and choice in method (M = 5.24; SD = 1.54); $t_{(302)}$= -6.21; $p < 0.01$. As expected, participants in the choice in pace condition had higher mean scores than participants who were exposed to choice in method conditions. For rationale, I ran cross-tabs with Pearson's chi-squared test to examine whether participants recognised the rationale that was provided to them. The analysis revealed that 74.0% of the participants who were exposed to the hedonic rationale condition recognised the rationale that was provided to them (χ^2 = 87.42; $p < .01$). A second test for recognition rationale showed that 88.5% of the participants who were exposed to the recognition rationale condition acknowledged the rationale that was provided to them (χ^2 = 151.75; $p < .01$). These results indicate that the majority of participants could correctly recognise the type of rationale they were given.

For perspective-taking, I ran cross-tabs with Pearson's chi-squared test to examine whether participants recognised the source of perspective-taking in the brand community that was provided to them. The analysis revealed that 84.8% of the participants who were exposed to the customer brand community condition recognised that other customers had responded to comments/queries on the brand community forum (χ^2 =156.46; $p < .01$). A second test showed that 80.6% of the participants who were exposed to the organisation brand community condition recognised that Tops 'n' Tees representatives responded to comments/queries on the brand community forum (χ^2 = 104.39; $p < .01$). These results indicate that participants could recognise the source of perspective-taking in the brand community forum. For the degree of perspective-taking, independent sample *t*-tests revealed a significant difference between

customer brand communities (M = 5.94; SD = 0.98) and organisation brand communities (M = 5.93; SD = 1.03); $t_{(302)}$= -3.11; $p < 0.05$. As expected, results suggest that the source of perspective-taking in a customer brand community is higher than that in an organisation brand community. As the manipulation checks were successful, I proceeded to analyse the data for the study.

2.20.2 ANOVA and Planned Contrasts

A 2 (choice) x 2 (rationale) x 2 (perspective-taking) ANOVA revealed a significant main effect of choices on perceived autonomy ($F_{(1, 303)}$ = 15.40; $p < 0.01$; η_p^2 = 0.05; MS_{choices} = 22.48). Consistent with H15, planned contrasts showed that perceived autonomy was significantly higher in choice in pace conditions (M = 5.53, SE = 0.09) compared to choice in method conditions (M = 4.98, SE = 0.10;) $t_{(296)}$ = 4.00; $p < 0.01$) (see Table 15).

Table 15. Descriptives for perceived autonomy by choice – Study 6

Choice	*M*	*SD*	CIs
Choice in Method (N = 157)	4.98	1.31	(4.77–5.19)
Choice in Pace (N = 147)	5.53	1.12	(5.35–5.71)

Note: CI = 95% Confidence Intervals

A 2 (choice) x 2 (rationale) x 2 (perspective-taking) ANOVA revealed a significant main effect of rationale on perceived autonomy ($F_{(1, 303)}$ = 4.70; $p < 0.05$; η_p^2 = 0.02; $MS_{\text{rationale}}$ = 6.86). Consistent with H16, planned contrasts showed that perceived autonomy was significantly higher in hedonic rationale conditions (M = 5.40, SE = 0.10) compared to recognition rationale conditions (M = 5.08, SE = 0.11; $t_{(296)}$ = 2.23; $p < 0.05$) (see Table 16).

Table 16. Descriptives for perceived autonomy by rationale – Study 6

Rationale	*M*	*SD*	CIs
Hedonic rationale (N = 152)	5.40	1.18	(5.21–5.59)
Recognition rationale (N = 152)	5.08	1.31	(4.87–5.30)

Note: CI = 95% Confidence Intervals

A 2 (choice) x 2 (rationale) x 2 (perspective-taking) ANOVA revealed a significant main effect of perspective-taking on perceived autonomy ($F_{(1, 303)} = 7.71$; $p < 0.01$; $\eta_p^2 = 0.03$; $MS_{\text{perspective-taking}} = 11.26$). Consistent with H17, planned contrasts showed that perceived autonomy was significantly higher in customer brand community conditions ($M = 5.44$, SE = 0.09) compared to organisation brand community conditions ($M = 5.05$, SE = 0.11; $t_{(296)} = 2.74$; $p < 0.01$) (see Table 17).

Table 17. Descriptives for perceived autonomy by perspective-taking – Study 6

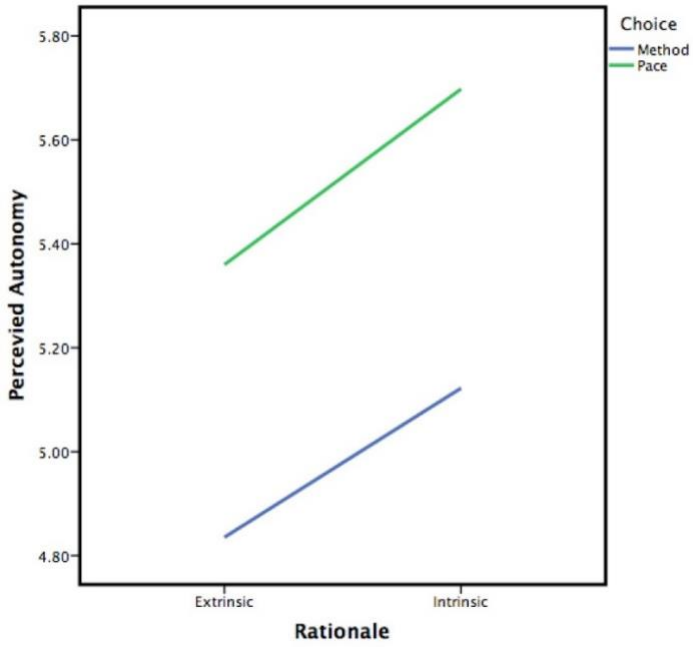
Perspective-taking	*M*	*SD*	CIs
Customer brand community (N = 153)	5.44	1.12	(5.26-5.62)
Organisation brand community (N = 151)	5.05	1.35	(4.83- 5.26)

Note: CI = 95% Confidence Intervals

The choice × rationale interaction was not found to be significant ($F_{(1, 303)} = 0.00$; $p = 0.95$; $\eta_p^2 = 0.00$; $MS_{(\text{choice} \times \text{rationale})} = 0.00$), refuting H18. Simple effects analysis revealed that under choice in pace conditions there was a significant difference in perceived autonomy between hedonic and recognition rationale ($M_{\text{hedonic rationale}} = 5.68$, $M_{\text{recognition rationale}} = 5.37$; $F_{(1, 296)} = 7.94$, $p <$

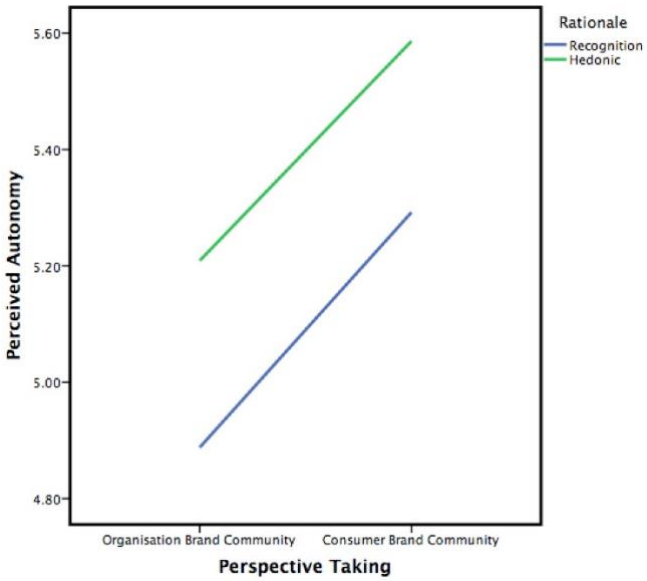
0.01) (see Figure 19). Similarly, under choice in method conditions there was a significant difference in perceived autonomy between hedonic and recognition rationale ($M_{\text{hedonic rationale}}$= 5.12, $M_{\text{recognition rationale}}$ = 4.83; $F_{(1, 296)}$ = 7.46, p < 0.01).

Figure 19. Interaction between choice and rationale – Study 6



The rationale x perspective–taking interaction was not significant ($F_{(1, 303)}$ = 0.06; p = 0.80; η_p^2 = 0.00; $MS_{\text{(rationale x perspective-taking)}}$ = 0.09), refuting H19. Simple effects analysis showed that under hedonic rationale conditions there was a significant difference in perceived autonomy between customer and organisation brand community conditions (M_{customer} = 5.57, $M_{\text{organisation}}$ = 5.22; $F_{(1, 296)}$ = 3.19, p < 0.1) (see Figure 20). Also, under recognition rationale conditions there was a significant difference in perceived autonomy between customer and organisation brand community conditions (M_{customer} = 5.31, $M_{\text{organisation}}$ = 4.89; $F_{(1, 296)}$ = 4.58 p < 0.05).

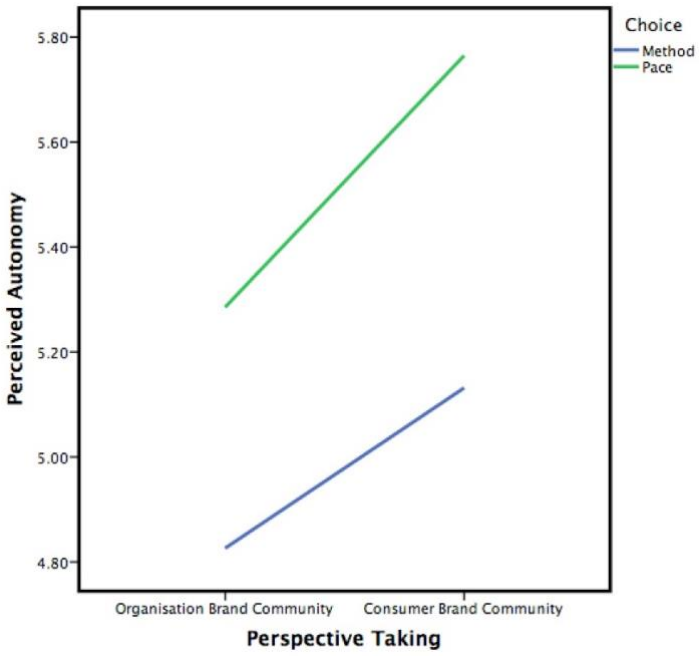
Figure 20. Interaction between rationale and perspective-taking – Study 6



The choice x perspective-taking interaction was not significant ($F_{(1, 303)} = 0.29$; $p = 0.59$; $\eta_p^2 = 0.00$; $MS_{(\text{choice x perspective-taking})} = 0.43$), refuting H20. Simple effects analysis showed that under choice in pace conditions there was a significant difference in perceived autonomy between customer and organisation brand community conditions ($M_{\text{customer}} = 5.75$, $M_{\text{organisation}} = 5.29$; $F_{(1, 296)} = 10.037$, $p < 0.01$) (see Figure 21). Likewise, under choice in method conditions there was a significant difference in perceived autonomy between customer and organisation brand community conditions ($M_{\text{customer}} = 5.13$, $M_{\text{organisation}} = 4.82$; $F_{(1, 296)} = 5.69$, $p < 0.05$).

The three-way interaction between choice x rationale x perspective-taking on perceived autonomy was not significant ($F_{(1, 303)} = 0.09$; $p = 0.75$; $\eta_p^2 = 0.00$; $MS_{(\text{choice x rationale x perspective-taking})} = 0.14$).

Figure 21. Interaction between choice and perspective-taking – Study 6



2.20.3 Confirmatory Factor Analysis and Correlations

CFA was run for all latent constructs in the model. Results suggest the model is, overall, a good fit (χ^2(df = 1052) = 2339.088; $p < 0.01$; CFI = 0.918; TLI = 0.912; RMSEA = 0.063; SRMR = 0.044). All factor loadings were statistically significant and above the cut-off value of 0.5. As shown in Table 18, composite reliability was demonstrated (all values > 0.7). Thresholds for discriminant validity, as outlined in the methods section, were achieved for all constructs. Correlations for all constructs are presented below.

Table 18. Confirmatory factor analysis and correlation matrix – Study 6

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Perceived autonomy	**.658**												
2. Cognitive engagement	.683**	**.862**											
3. Intrinsic motivation	.673**	.565**	**.763**										
4. Involvement	.447**	.404**	.646**	**.681**									
5. Participation Enjoyment	.701**	.715**	.633**	.499**	**.870**								
6. Repeat participation	.651**	.626**	.566**	.459**	.785**	**.907**							
7. Willingness to pay	.504**	.497**	.416**	.376**	.516**	.470**	-						
8. Perceived design quality	.601**	.699**	.439**	.305**	.661**	.583**	.502**	-					
9. Perceived ability	.245**	.221**	.148**	.226**	.277**	.189**	.145*	.184**	**.814**				
10. Trait autonomy	.277**	.187**	.217**	.244**	.221**	.172**	.263**	.135*	.228**	**.730**			
11. Past experience	.047	.103	.200**	.338**	.135*	.199**	.126*	.078	.036	-.128*	-		
12. Age	-.022	-.144*	-.101	-.148**	-.089	-.094	-.084	-.067	.063	.152**	-.296**	-	
13. Gender	.069	.057	.147*	.178**	.111	.086	.055	.036	.123*	.015	-.115*	.064	-
CR	.955	.974	.928	.925	.971	.966	-	-	.929	.912	-	-	-
MSV	.530	.539	.340	.324	.653	.653	-	-	0.077	0.077	-	-	-
ASV	.318	.283	.216	.199	.347	.290	-	-	0.049	0.050	-	-	-

Note: Correlations are below diagonal, and Average Variance Extracted (AVE) estimates are presented on the diagonal (in bold); CR = composite reliability; MSV = maximum shared variance; ASV = average shared variance; **. Correlation is significant at the 0.01 level (2-tailed); *Correlation is significant at the 0.05 level (2-tailed)

2.20.4 SEM – Hypothesised Relationships

The findings presented in Table 19 suggest that the hypothesised structural model fits the data relatively well (χ^2(df = 1281) = 2839.957; p < 0.01; CFI = .903; TLI= 0.896; RMSEA = .063; SRMR = .068). As expected, perceived autonomy was found to have a significant influence on cognitive customer engagement ($\beta = 0.669$ $p < 0.01$), supporting H21. I also found that perceived autonomy had a significant influence on intrinsic motivation ($\beta = 0.586$ $p < 0.01$), supporting H22.

Table 19. Structural model path relationships – Study 6

Specified Paths	β	**SE**	**Significance**
DV: Intrinsic Motivation			
Perceived autonomy	.586	.053	$p < .01$
Trait autonomy	.015	.079	$p = .849$
Age	-.078	.052	$p = .130$
Gender	.096	.049	$p < .10$
DV: Cognitive customer engagement			
Perceived autonomy	.669	.053	$p < .01$
Involvement	.093	.049	$p < .1$
DV: Participation enjoyment			
Intrinsic Motivation	.146	.074	$p < .05$
Cognitive customer engagement	.567	.061	$p < .01$
Perceived ability	.100	.051	$p < .05$
Experience	.027	.038	$p = .488$
Age	.022	.042	$p = .608$
Gender	.015	.037	$p = .678$

DV: Repeat participation intentions			
Intrinsic Motivation	.165	.075	$p < .05$
Cognitive customer engagement	.510	.061	$p < .01$
Perceived ability	.029	.057	$p = .610$
Experience	.121	.043	$p < .01$
Age	.033	.052	$p = .527$
Gender	.024	.045	$p = .597$
DV: Willingness to pay			
Intrinsic Motivation	.035	.060	$p = .559$
Cognitive customer engagement	.411	.048	$p < .01$
Perceived ability	.009	.052	$p = .858$
Experience	.050	.064	$p = .436$
Age	.007	.055	$p = .897$
Gender	.001	.051	$p = .978$
DV: Perceived design Quality			
Intrinsic Motivation	.048	.073	$p = .505$
Cognitive customer engagement	.681	.057	$p < .01$
Perceived ability	.027	.051	$p = .596$
Experience	.007	.045	$p = .875$
Age	.036	.048	$p = .448$
Gender	-.013	.043	$p = .762$
Squared multiple correlations R^2			
Intrinsic Motivation	.363	.062	$p < .01$
Cognitive customer engagement	.520	.055	$p < .01$
Enjoyment	.615	.044	$p < .01$
Repeat participation intention	.461	.056	$p < .01$

Note: β = standardised estimates; SE = standard error; Control variables are presented in grey

Table 20 presents the findings for the indirect relationships. Supporting H23a, cognitive customer engagement was found to have a significant influence on participation enjoyment ($\beta = 0.567$ $p < 0.01$). The indirect effect of perceived autonomy on participation enjoyment mediated by cognitive customer engagement was found to be significant, with a 95% bias-corrected bootstrap confidence interval not containing zero (*ab* = 0.379; SE = 0.051; [CI = 0.280, 0.481]), supporting H23b. The relative indirect effect implies that participants who perceived high levels of autonomy in the co-production platforms were 0.379 units more likely to enjoy participating in the t-shirt design activity. Supporting H24a, cognitive customer engagement was found to have a significant influence on repeat participation intentions ($\beta = 0.510$ $p < 0.01$). The indirect effect of perceived autonomy on repeat participation mediated by cognitive customer engagement was found to be significant, with a 95% bias-corrected bootstrap confidence interval not containing zero (*ab* = 0.341; SE = 0.056; [CI = 0.234, 0.452), supporting H24b. The relative indirect effect reveals that participants who perceived high levels of autonomy in the co-production platforms were 0.341 units more likely to participate in future t-shirt design activities. Supporting H25a, cognitive customer engagement was found to have a significant influence on willingness to pay ($\beta = 0.411$ $p < 0.01$). The indirect effect of perceived autonomy on willingness to pay mediated by cognitive customer engagement was found to be significant, with a 95% bias-corrected bootstrap confidence interval not containing zero (*ab* = 0.274; SE = 0.042; [CI = 0.194, 0.357]), supporting H25b. The relative indirect effect reveals that participants who perceived high levels of autonomy in the co-production platforms were 0.274 units more likely to be willing to pay for the t-shirt design they created. Supporting H26a, cognitive customer engagement was found to have a significant influence on willingness to pay ($\beta = 0.681$ $p < 0.01$). The indirect effect of perceived autonomy on perceived design quality mediated by cognitive customer engagement was found to be significant, with a 95%

bias-corrected bootstrap confidence interval not containing zero (*ab* = 0.455; SE = 0.059; [CI = 0.342, 0.572]), supporting H26b. The relative indirect effect reveals that participants who perceived high levels of autonomy in the co-production platforms were 0.455 units more likely to perceive their t-shirts design to be of high quality.

Supporting H27a, intrinsic motivation was found to have a significant influence on participation enjoyment (β = 0.146 p < 0.05). The indirect effect of perceived autonomy on participation enjoyment mediated by intrinsic motivation was found to be significant, with a 95% bias-corrected bootstrap confidence interval not containing zero (*ab* = 0.086; SE = 0.048; [CI = 0.002, 0.189]), supporting 27b. The relative indirect effect implies that participants who perceived high levels of autonomy in the co-production platforms were 0.086 units more likely to enjoy participating in the t-shirt design activity. Supporting H28a, intrinsic motivation was found to have a significant influence on repeat participation intentions (β = 0.165 p < 0.05). The indirect effect of perceived autonomy on repeat participation intentions mediated by intrinsic motivation was found to be significant, with a 95% bias-corrected bootstrap confidence interval not containing zero (*ab* = 0.097; SE = 0.042; [CI = 0.011, 0.201]), supporting 28b. The relative indirect effect implies that participants who perceived high levels of autonomy in the co-production platforms were 0.097 units more likely to enjoy participating in the t-shirt design activity. However, intrinsic motivation did not have a significant influence on willingness to pay (β = 0.035 p = 0.559), refuting H29a. As a result, the indirect effect of perceived autonomy on willingness to pay mediated by intrinsic motivation was not also not significant, with a 95% bias-corrected bootstrap confidence interval containing zero (*ab* = 0.021; SE = 0.036; [CI = -0.045, 0.099]), refuting H29b. Similarly, intrinsic motivation did not have a significant influence on perceived design quality (β = 0.048 p = 0.505), refuting H30a. Consequently, the indirect effect of perceived autonomy on perceived design quality

mediated by intrinsic motivation was also not significant, with a 95% bias-corrected bootstrap confidence interval containing zero (*ab* = 0.028; SE = 0.043; [CI = -0.051, 0.119]), refuting H30b.

Table 20. Confidence intervals, indirect effects, direct effects, and standard error for intrinsic motivation and cognitive customer engagement as mediators – Study 6

Relationship tested			LLCI	ULCI	Indirect Effect Estimate	SE	Hypothesis Supported?
IV	**Mediator**	**Outcome**					
Perceived autonomy	Cognitive Engagement	Participation enjoyment	0.280	0.481	0.379***	0.051	Yes
Perceived autonomy	Cognitive Engagement	Repeat participation	0.234	0.452	0.341***	0.056	Yes
Perceived autonomy	Cognitive Engagement	Willingness to pay	0.194	0.357	0.274***	0.042	Yes
Perceived autonomy	Cognitive Engagement	Design Quality	0.342	0.572	0.455***	0.059	Yes
Perceived autonomy	Intrinsic Motivation	Participation enjoyment	0.002	0.189	0.086*	0.048	Yes
Perceived autonomy	Intrinsic Motivation	Repeat participation	0.011	0.201	0.097**	0.042	Yes
Perceived autonomy	Intrinsic Motivation	Willingness to pay	-0.045	0.099	0.021	0.036	No
Perceived autonomy	Intrinsic Motivation	Design Quality	-0.051	0.119	0.028	0.043	No

Note: LLCI = Lower level confidence interval; ULCI = upper level confidence interval; SE = standard error;

*$p < .10$; **$p < .05$; ***$p < .01$

Chapter 3 – Discussion, Contributions and Implications

3.1 General Discussion

Although a growing number of studies have identified autonomy as a motivator that encourages customers to participate in the production process (Etgar, 2008; Hoyer et al., 2010), there is very little understanding of the ways in which organisations can design their co-production platforms to enhance perceptions of autonomy. Self-determination theory underpins our understanding of how best to enhance consumer perceptions of autonomy in co-production platforms by providing choice, rationale and perspective-taking (for example Su & Reeve, 2011). However, some studies have demonstrated that these three support factors do not always have a positive influence on perceived autonomy (Reeve, 2006; Patall et al., 2013; Assor et al., 2002). Given the contradictory findings in the literature, this study set out to answer the first research question:

> *What are the impacts of different types of choice, rationale and degrees/sources of perspective-taking on perceived autonomy?*

To answer the research question above, I adapted these support factors into features of a co-production platform to understand their influence on consumers' perceived autonomy. More specifically in *Study 1*, I looked at the influence of action vs option choice, intrinsic vs extrinsic rationale and HPT vs LPT brand communities and their effects on perceived autonomy.

Although co-production literature has identified autonomy as a psychological motivator or driver that encourages customers to participate in the production process (Etgar, 2008; Hoyer et al., 2010), it remains unknown whether enhanced perceptions of autonomy positively influence co-production

outcomes. I argue that it is essential for the co-production literature to understand the influence of perceptions of autonomy on the key coproduction outcomes that determine the success of these platforms. Therefore, this thesis is set out to understand a second research question:

Does enhanced perceived autonomy positively influence key co-production outcomes?

To answer the second research question, I set out the conceptual model in *Study 1* to understand the influence of enhanced perceptions of autonomy on consumers' emotional (enjoyment) and behavioural (repeat participation intention and willingness to pay) intentions mediated by intrinsic motivation. The findings indicate that consumers' perceptions of autonomy were significantly higher under action choice conditions when compared to option choices. This finding was consistent with the stated hypothesis. I conclude that when consumers are making ongoing choices about how to apportion their time, how to organise the environment, and how much effort to expend within the activity (action choices), they feel a higher sense of autonomy compared to selecting from pre-set alternatives (option choices).

Consistent with the stated predictions, I found that participants who received an intrinsic rationale for participation had higher perceptions of autonomy compared to participants who received an extrinsic rationale. Baer, Oldham and Cummings (2003) report that consumers like to have control during creative tasks such as designing. However, working for an extrinsic rationale can lead consumers to feel controlled rather than autonomous. Therefore, organisations should provide a meaningful intrinsic rationale to customers for participation because it relieves them from internal pressures while engaging in the co-production platform and allows them to feel a sense of freedom.

Consistent with the predictions, HPT brand communities were found to positively influence perceptions of autonomy compared to LPT brand communities. When perspective-taking is done

successfully in a community, it creates an empathetic atmosphere for customers that helps alleviate their inner tensions and pressures, and legitimises their feelings, allowing them to feel free while engaging with the platform. Autonomy is truly felt when inner tensions are alleviated (Koestner et al., 1984).

I found significant interaction effects between choice and rationale, consistent with the predictions. Partial eta scores indicate that the influence of the interaction effect (between choice and rationale) is stronger in influencing perceived autonomy than the main effects of choice only and rationale only conditions. This novel finding contributes to SDT, suggesting that, in the action choice condition, perceived autonomy was significantly greater when intrinsic rationale was provided compared to conditions when extrinsic rationale was provided. However, in the option choice condition, there was no difference in perceived autonomy between intrinsic versus extrinsic rationale. Within the action choice condition, consumers are making ongoing choices about how to organise their co-production environment and how much time and effort to spend on the activity. Giving an intrinsic rationale allows consumers to make these action choices in accordance with their inner self, enhancing their perceptions of autonomy. However, if a consumer is given an extrinsic rationale, the consumer's ongoing choices about the method pace and effort would be controlled by the performance contingent rationale, reducing their perceptions of autonomy.

In addition, I found significant interaction effects between rationale and perspective-taking, consistent with the predictions. This finding is new to SDT, suggesting that, in the intrinsic rationale condition, perceived autonomy was significantly greater when consumers were exposed to HPT brand communities compared to conditions when consumers were exposed to LPT brand communities. However, in the extrinsic rationale condition, there was no difference in perceived autonomy between HPT and LPT brand communities. Consumers provided with an intrinsic rationale highly value the task (Reeve et al., 2002). When consumers are provided with access to

HPT brand communities in intrinsic rationale conditions, it provides them with an avenue to discuss problems or to ask questions of other consumers. This allows them to find tactics to further internalise their behaviour within the activity, enhancing perceived autonomy. However, if consumers are exposed to LPT brand communities they will critically analyse the co-production environment and will not feel comfortable discussing any activity-related problems; this adds to their tensions and pressures, reducing their perceptions of autonomy.

I did not find a significant interaction effect between choice and perspective-taking, which was inconsistent with the predictions. It is possible that the presence of either type of brand community does not have any interaction with the choices because choices are seen as originating from one's preferences, goals, and values (Markus & Kitayama, 2003) within co-production platforms. Therefore, the choices made in the co-production platforms are driven by one's personal preference, leaving little need for perspective-taking.

I found that intrinsic motivation mediates the relationship between perceived autonomy and participation enjoyment. These findings are consistent with past studies suggesting that intrinsically motivated individuals who engage in self-service technology activities for their own sake, simply for the experience of participation, can derive significant enjoyment from those activities (Bateson, 1985; Belk et al., 2000). Further, intrinsic motivation was found to mediate the relationship between perceived autonomy and repeat participation intentions. Although these findings are novel in the context of co-production, past studies in health (Pelletier et al., 2001) and education (Lam et al., 2010) have found that individuals whose behaviours originate from inner volition are prone to long-term adherence (Williams et al., 1998). Intrinsic motivation also mediates the relationship between perceived autonomy and willingness to pay. Although studies in the co-production field have demonstrated that willingness to pay for self-designed products can be much higher than for standard products (Franke & Piller, 2004; Franke et al., 2010), it was not clear why consumers have

a higher willingness to pay. This study provides a further novel finding in understanding that when customers experience autonomy in co-production platforms, they have a higher willingness to pay for co-produced items mediated by intrinsic motivation.

Study 1 provided preliminary support for the hypothesis that different types of choices, rationale and perspective-taking influence perceived autonomy. In studies 2, 3, 4 and 5, I looked at each of these support factors in isolation and tested whether there were other types of choices, rationale and perspective-taking that can influence autonomy.

Corresponding with SDT, organisation literature suggests that autonomy can be given to employees either by allowing them to decide on the way the organise their work (method) or by giving them a choice in the amount of time they want to spend on the tasks (pace) (Wang & Cheng, 2010; Pink, 2011). However, studies utilising SDT have not yet investigated whether both these dimensions of choice equally drive perceptions of autonomy. Therefore, in Study 2, I explored the influence of two dimensions of action choice – choice in method vs choice in pace – on perceived autonomy. Consistent with my predictions, findings indicate that choice in pace has a stronger influence on perceived autonomy than choice in method. Choice in pace allows individuals to continuously regulate their behaviour (Reeve et al., 2003), whereas choice in method provides little opportunity to make meaningful choices (Stefanou et al., 2004), having no significant influence on perceived autonomy. This novel finding contributes to SDT by providing an understanding that choice in pace is a stronger driver for consumers' perceived autonomy than choice in method within co-production platforms.

Studies of autonomy support factors to date have only compared the presence vs absence of rationales for participation in an activity, with mixed findings as to influence on perceived autonomy (Reeve & Jang, 2006; Patall et al., 2013). Moreover, co-production literature has identified intrinsic and extrinsic incentives as drivers for co-production (Roberts et al., 2013; Füller,

2010), but none of these studies have addressed the influence of these drivers on consumers' perception of autonomy within co-production platforms. Given that in Study 1 I found that the personal development intrinsic rationale has a stronger influence on perceptions of autonomy when compared to extrinsic rationales, I set out in Study 3 to understand whether the type of intrinsic rationale provided has an influence on perceived autonomy. Therefore, I investigated the influence of two types of intrinsic rationales, hedonic and personal development, on perceived autonomy. Consistent with the predictions, it was found that participants who received a hedonic rationale for participation had higher perceptions of autonomy than participants who received a personal development rationale. Customers participating to satisfy a hedonic need undertake the co-production activity purely because of the fun they might derive from participating. In contrast, a personal development rationale can give rise to internal pressures such as ego-involvement, where a person is trying to demonstrate high competence to themselves, undermining their perceptions of autonomy. Therefore, hedonic rationales are more effective than personal development rationales within a co-production platform in enhancing perceptions of perceived autonomy. This finding contributes both to SDT and to the co-production literature by empirically demonstrating that not all intrinsic incentives drive perceptions of autonomy equally within co-production platforms.

Similarly, in Study 4 I looked the influence of two common types of extrinsic rationale, recognition vs monetary, on perceived autonomy. My findings indicate that consumers' perceptions of autonomy do not differ between the two types of extrinsic rationale conditions. This finding was inconsistent with the stated hypotheses, which postulated that when consumers are given a recognition rationale they perceive benefits for long-term opportunities within co-production (Zhao & Zhu, 2014), allowing them to internalise this external incentive.

Within the autonomy support literature, perspective-taking has always been studied from the view of the autonomy support provider being the perspective-taker (Baard et al., 2004; Reeve

& Jang, 2006). In reality, consumers may not always reach out to the organisation (the support provider); instead, they may turn to other customers for support (Rosenbaum & Massiah, 2007). Therefore, Study 5 set out to understand whether the source of perspective-taking (i.e., organisation vs peers) has an influence on perceived autonomy. Findings indicate that, compared to participants exposed to organisation brand communities, participants exposed to customer brand communities had higher perceptions of autonomy. These findings were consistent with the predictions. Since empathetic atmospheres enhance perceived autonomy (Koestner et al., 1984), and empathy is strongest between people who share similar experiences (Ickes, 1993), customer brand communities have a stronger influence on perceived autonomy than organisation brand communities. This finding contributes to SDT by providing empirical evidence that (1) different avenues for perspective-taking can be provided by the organisation, and (2) not all avenues of perspective-taking drive perceptions of autonomy equally within co-production platforms.

In Study 6, I aimed to replicate the findings for the main effects found in studies 2–5 and test whether there are any interaction effects between the IVs tested individually in the preceding studies. Therefore, I look at the influence of choice in method vs choice in pace, hedonic vs recognition rationale and customer vs organisation brand communities and their interactions on perceived autonomy. I also tested an additional mediator to intrinsic motivation – cognitive customer engagement.

As expected, Study 6 replicated the findings of the main effects from the previous studies, which found that choice in pace, hedonic rationale and customer brand communities have a positive influence on perceived autonomy. Inconsistent with the predictions, however, I did not find a significant interaction effect between the choice and rationale. A possible explanation for this is that when consumers are participating to seek a hedonic experience they are focused on having fun (Holbrook, 2006) and therefore the type of choice present in the co-production platform is less

important and thus does not influence their perceptions of autonomy.

Similarly, the interaction effect between rationale and perspective-taking was not significant, which was inconsistent with the predictions. It is possible that when people are focused on having fun within the co-production activity, that the presence of either brand community does not affect them because they are consumed by the experience itself (i.e., co-producing the product). This finding was inconsistent with Study 1, where the rationale and perspective-taking interaction was significant. However, in Study 1 I used a personal development rationale, and found that under this intrinsic rationale perceived autonomy was significantly greater when consumers were exposed to HPT brand communities, compared to conditions when consumers were exposed to LPT brand communities. I conclude that, when consumers are trying to pursue personal growth and development or experience a stimulating challenge to better themselves, they may be more inclined to seek out support from consumer brand communities.

The interaction effect between choice and perspective-taking was not significant, which was inconsistent with the predictions. However, this finding was consistent with the finding in Study 1, where the choice and perspective-taking interaction was also not significant. This may be because choices made in the co-production platforms are driven by personal preference goals, and values (Markus & Kitayama, 2003), leaving little room for the need for undertaking other people's perspectives.

I found that cognitive customer engagement mediates the relationship between perceived autonomy and participation enjoyment; this is a novel finding in the engagement literature. I provide empirical evidence that when customers experience autonomy in co-production platforms, it enhances their feelings of enjoyment because they are fully engrossed in the co-production activity. Further, cognitive customer engagement was found to mediate the relationship between perceived autonomy and repeat participation intentions. These findings are new to the co-

production context, although workplace literature has found that when employees are engaged they tend to have greater attachment to the organisation (Schaufeli & Bakker, 2004) and are committed to the organisation they work for (Saks, 2006). Cognitive customer engagement also mediates the relationship between perceived autonomy and willingness to pay; this finding contributes to the engagement literature. I provide empirical evidence that when consumers have enhanced autonomy they become cognitively engaged in an activity, thereby enhancing their willingness to pay a premium for the co-produced product. Cognitive customer engagement was also found to mediate the relationship between perceived autonomy and outcome quality.

Similar to Study 1, I found intrinsic motivation mediates the relationship between perceived autonomy and enjoyment and repeat participation intentions. However, inconsistent with Study 1 and my predictions, intrinsic motivation did not mediate the relationship between perceived autonomy and willingness to pay. I also found that intrinsic motivation did not mediate the relationship between perceived autonomy and perceived design quality. This could be due to the presence of cognitive customer engagement as an additional mediator, which may supress the effects of intrinsic motivation.

An interesting finding from the study provides a very important insight for SDT. By comparing the strength of the coefficients of the indirect effects, I found that engagement is a stronger mediator than intrinsic motivation in explaining the relationship between perceived autonomy and participation enjoyment and repeat participation intentions. Moreover, I found that cognitive customer engagement replaces intrinsic motivation as a mediator between perceived autonomy and willingness-to-pay outcome quality. Based on the findings of this dissertation, the relationship between perceived autonomy and important outcomes is better explained by cognitive customer engagement than by intrinsic motivation within co-production platforms.

3.2 Contributions to Theory

Consumers are increasingly seeking more autonomy when they participate in organisational processes (OHern & Rindfleisch, 2010; Hoyer et al., 2010). However, there is little understanding of how co-production platforms can support and enhance customers' perception of autonomy and whether enhanced autonomy can lead to successful and sustainable co-production platforms. To my knowledge, this is a first-of-a-kind study that expands the co-production literature by providing empirical evidence of how to enhance perceptions of autonomy within co-production platforms.

Previous studies have typically only compared the presence vs absence of support factors within an environment and its influence on perceived autonomy (Su & Reeve, 2011). The findings of those studies are mixed, with some providing evidence that these support factors do not always enhance feelings of autonomy (Reeve et al., 2003; Patall et al., 2013). This study extends SDT theory by demonstrating that we need to go beyond the mere presence or absence of support factors. Instead, we need to understand the effects of different types of choice, rationale and perspective-taking on perceived autonomy. This research provides empirical evidence that perceived autonomy can be enhanced within co-production platform when consumers are given action choices, more specifically choice in pace, within the activity; when they are provided with intrinsic rationales, such as personal development or hedonic rationales; and when they have access to HPT communities and consumer brand communities.

The premise of SDT is that when basic psychological needs (such as autonomy) are satisfied individuals experience intrinsic motivation, while those whose needs are neglected experience low-quality motivation or amotivation (Reeve, 2012). On this basis, most studies employ intrinsic motivation as a key mediator to understand the influence of autonomy support on outcomes (Deci & Ryan, 2000; Reeve et al., 2003; Reeve & Jang, 2006). However, this study provides evidence

that the influence of perceived autonomy on co-production outcomes (participation enjoyment, repeat participation intention, willingness to pay and perceived design quality) is better explained by increases in cognitive customer engagement than by intrinsic motivation. Therefore, this research extends SDT by demonstrating the importance of cognitive customer engagement as a mediator to explain the influence of perceived autonomy on key co-production outcomes.

The concept of customer engagement has developed rapidly in the academic marketing literature in the last decade (Van Doorn et al., 2010; Brodie, Hollebeek, Juric & Ilic, 2011). This study contributes to the customer engagement literature by providing empirical evidence that perceived autonomy is a crucial antecedent of cognitive customer engagement within co-production platforms –and, more importantly, that cognitive engagement mediates the influence of autonomy on key co-production outcomes.

3.3 Implications for Practice

The locus of control predominantly resides with the organisation, which means companies determine the nature and extent of co-production they will undertake (Ranjan & Read, 2016). While co-production has been shown to have many potential benefits (Franke & Piller, 2004; Crandell, 2016) and some firms have realised the advantages of relinquishing control to customers during the co-production process, many are reluctant to do so. Primary concerns include leaking proprietary information, loss of control over the brand name and relinquishing managerial power (O'Hern & Rindfleisch, 2010). On the other hand, a growing number of customers are seeking increased autonomy while engaging with organisations, pressuring them to release control (O'Hern & Rindfleisch, 2010). Hoyer et al. (2010) suggest that attempts to restrict customers' autonomy in co-production platforms reduce their willingness to contribute ideas, and may even increase the risk of consumer resistance to the company. Therefore, it is extremely important that firms find

ways to increase consumers' perceptions of autonomy in co-production platforms without necessarily relinquishing control. This study offers specific structural elements to consider when developing co-production platforms.

One way firms can enhance perceptions of autonomy is by providing action choices – where the individual has choices in the method, pace and effort of participation – rather than providing them option choices which allow them only to select from a set of pre-determined alternatives. More specifically, providing choice in pace (vs method) of the activity has emerged as one of the most important factors contributing to perceptions of autonomy – see Study 6.

In addition, providing consumers with a personal development intrinsic rationale (a reason for engaging for the self, such as inner creativity or self-fulfilment), rather than an extrinsic rationale (monetary reward), allows consumers to internalise the activity. Providing a personal development intrinsic rationale in conjunction with action choices (choices in method, pace and effort) further amplifies perceptions of autonomy. Moreover, hedonic rationales are more effective than personal development rationales in enhancing perceived autonomy.

Brand communities are very important for customers, as they allow them to share essential resources such as information and experiences (Muniz & O'guinn, 2001). One of the most important methods (see Study 1) for enhancing perceptions of autonomy was to provide customers with access to HPT brand communities, with consumer brand communities found to be more effective than organisation brand communities. When consumers wish to reach out to other consumers, it is crucial for them to feel they are part of an empathetic community that is supportive of them. Thus, adding this feature onto co-production websites may be beneficial for organisations, especially when accompanied by an intrinsic rationale.

When customers work for reasons intrinsic to them, they highly value the task and seek to be a part of an empathetic community that can help alleviate any tensions or fears while co-

producing. In addition, providing co-producers access to customer brand communities rather than organisation brand communities further aids in enhancing autonomy.

In summary it is imperative that organisations consider the design of their websites to increase customers' perceptions of autonomy in co-production platforms, as this has been shown to be an effective strategy to influence outcomes that will sustain participation and benefit the organisation in running a profitable co-production platform.

3.4 Limitations and Future Research

One limitation of the study was the use of the hypothetical platform 'Tops n Tees'. Since Study 4 did not find any difference between recognition and monetary rationales, it is possible that participants on this platform were not able to internalise the recognition rationale in relation to an unknown hypothetical platform. Future studies should test these rationales with established firms that undertake online co-production activities.

Another limitation is that in Study 1 and Study 6 participants were promised a monetary compensation (an extrinsic motivation) to participate in the study. In addition, in studies 2, 3, 4, and 5 I utilised a sample of students, for whom an extrinsic motivation was present in the form of course credit. These extrinsic incentives could potentially influence the participants' perceptions of autonomy. Future studies should try to use other incentives (such as 'on behalf of your time spent doing the survey I can donate money to a charity of your choice') or use a convenience sample where no extrinsic incentive is involved.

Another possible limitation of the study is that the co-production setting was confined to a t-shirt design website. In order for these results to be generalisable to co-production platforms, future studies could test the framework with other co-production activities – for example, design your own luxury purse.

The study captures willingness to pay through the contingent valuation method (Mitchell & Carson, 1989), where respondents are asked to state their willingness to pay for the product they created. Although this method is frequently used (Franke & Piller, 2004), it is subject to the risk of overestimating actual willingness to pay (Wertenbroch & Skiera, 2002). Therefore, future research should look to carry out a field experiment and partner with an organisation that undertakes co-production activities to measure actual purchase behaviour.

3.5 Conclusion

Providing autonomy is often equated with providing control to consumers. Consequently, many originations are reluctant to enhance customer autonomy, due to concerns about losing control over their brands, ceding managerial power, or losing proprietary information (Hoyer et al., 2010). However, this dissertation provides evidence that providing consumers with autonomy can be beneficial for firms and organisations can enhance consumers' perceived autonomy by simply considering the design of the environment in which consumers co-produce. These techniques allow managers to provide consumers with autonomy without having to relinquish any managerial control to customers. Organisations should provide action choices that allow consumers to determine the pace of the activity, intrinsic rationales to participate in the activity, and access to consumer brand communities to ensure enhanced perceptions of autonomy. Extending the SDT to create a framework that enhances consumers' perceptions of autonomy provides many exciting opportunities for future researchers to explore in order to provide practical benefits for organisations undertaking co-production activities.

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Appendices

Appendix 1 – Ethics Approval Letter

THE UNIVERSITY OF MELBOURNE

EST. 1853

CELEBRATING 160 YEARS OF EXCELLENCE

2 March 2016

Prof Liliana Bove
Department of Management and Marketing
The University of Melbourne

Dear Prof Bove,

Project title: Examining the Role of Autonomy in Co-production Platforms

Researchers: Professor Liliana Bove, Triparna Gandhi, Associate Professor Anish Nagpal

Ethics ID: 1545269.2

I am pleased to advise that I have approved the amendment to this Project on behalf of the Faculty of Business and Economics Human Ethics Advisory Committee on 2 March 2016.

Please note it is your responsibility to ensure that all people associated with the Project are made aware of the amendment.

Yours sincerely,

Ms Jane Hronsky, Chair
Faculty Human Ethics Advisory Committee

Research Support Unit, Faculty of Business and Economics
The University of Melbourne, Victoria 3010 Australia
T: +61 3 8344 1670 **E:** fbe-reearch@unimelb.edu.au
W: www.ecom.unimelb.au/research/research/

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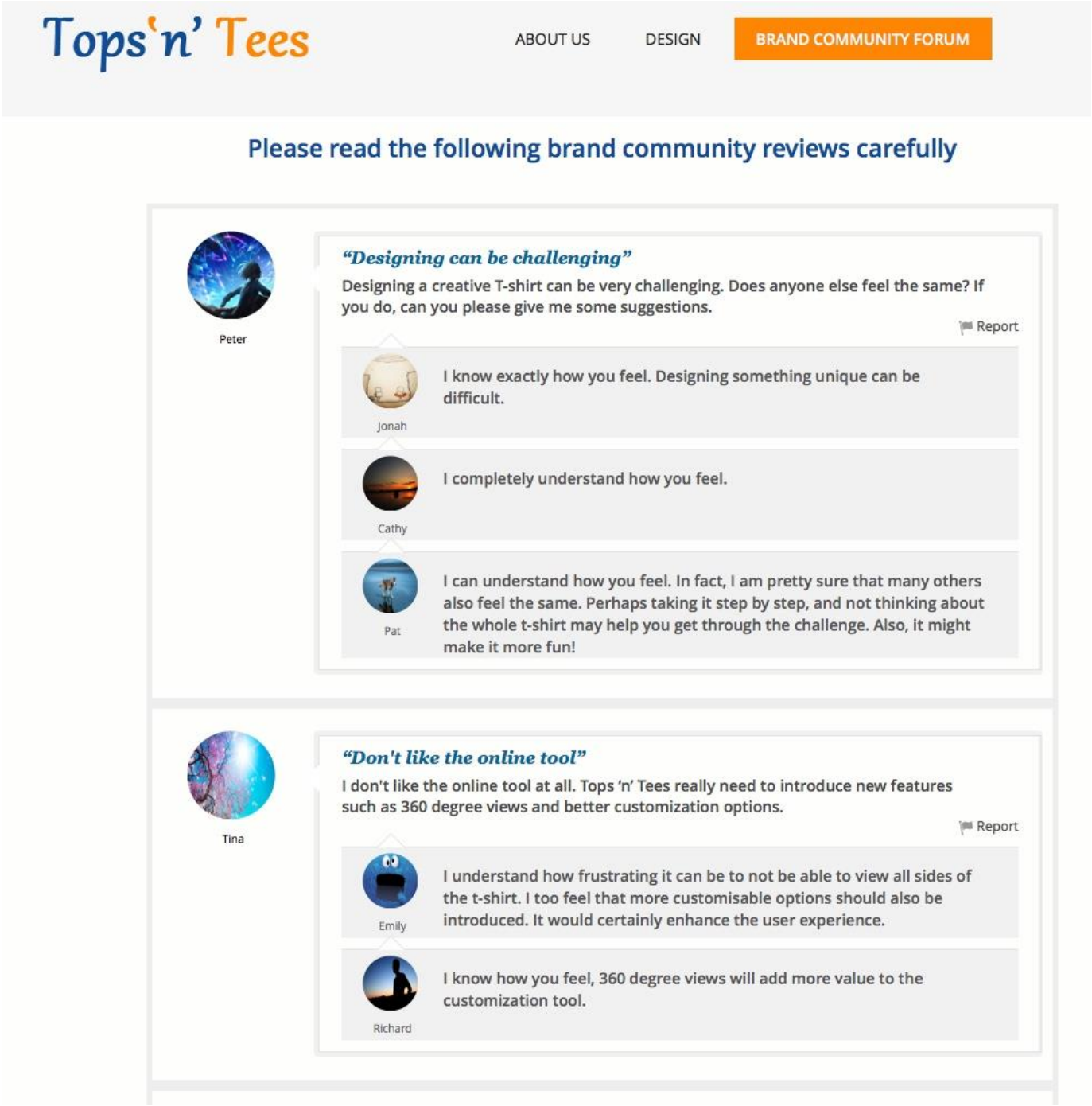
Appendix 2 – Brand Community Statements

High perspective-taking brand community statements



Katherine

"Cannot add two pockets"

When using the add the pocket feature I couldn't add more than one pocket, did anyone else experience this problem?

Report

Henry

I understand your disappointment of not being able to add more than one pocket. I experienced the same thing.

Terry

I couldn't add a second pocket either, I understand your frustration.

Tim

"Love the design tool"

I felt that the tools made for design activity were very easy to use. I also love the different images you can insert on the t-shirt.

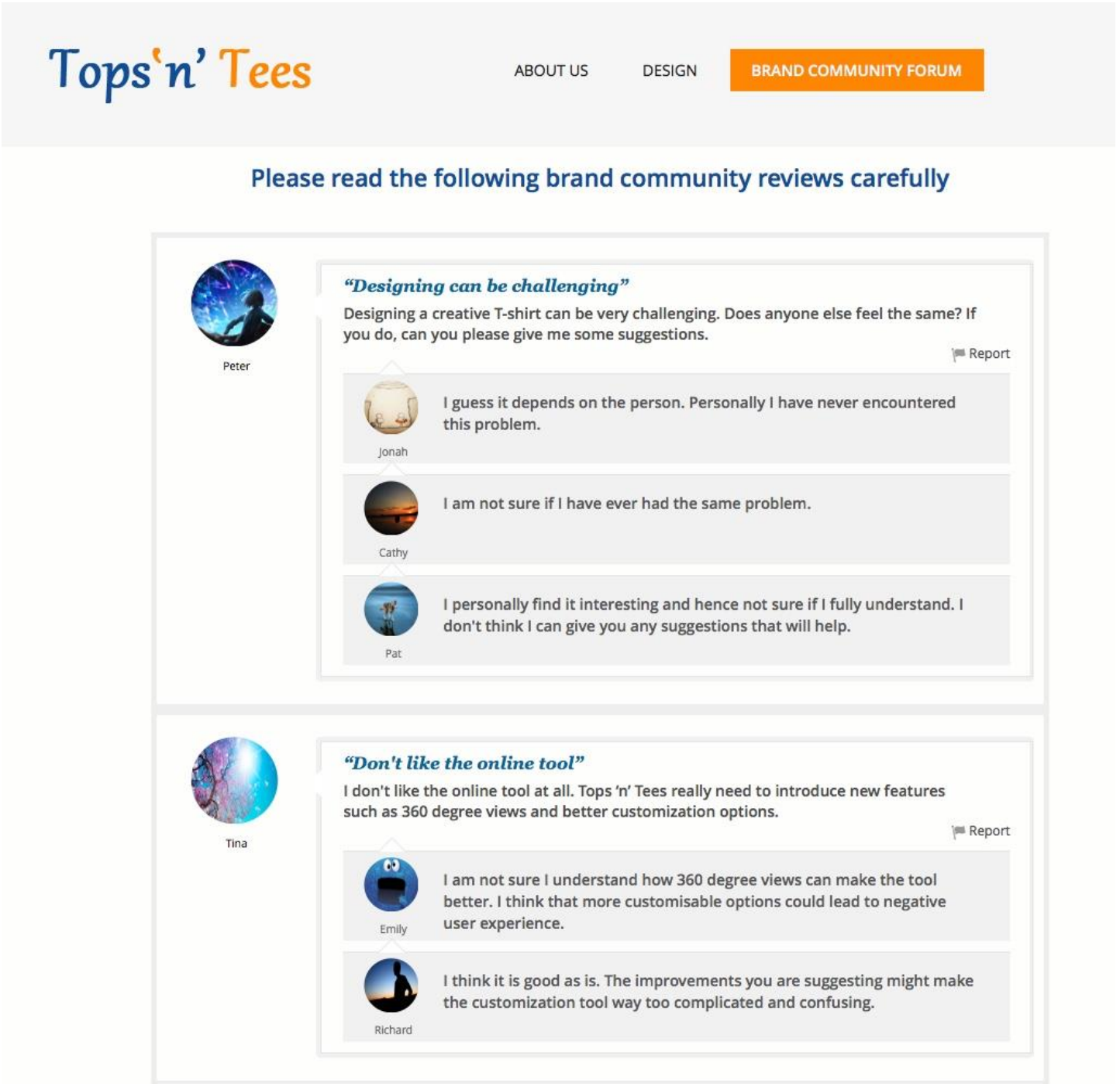
Report

Joanna

I completely understand your feelings. The images are amazing. I created some awesome designs using those images. So easy to use!!

Click here to take the survey

Low perspective-taking brand community statements



Katherine

"Cannot add two pockets"

When using the add the pocket feature I couldn't add more than one pocket, did anyone else experience this problem?

Report

Henry

I would not know because I have never used that feature.

Terry

I felt one pocket is more than enough for a t-shirt so I never tried to add another pocket.

Tim

"Love the design tool"

I felt that the tools made for design activity were very easy to use. I also love the different images you can insert on the t-shirt.

Report

Joanna

I don't feel the same way because I found some of the features to be time consuming. I think Tops 'n' Tees should simplify their design tool considerably so it is more user friendly.

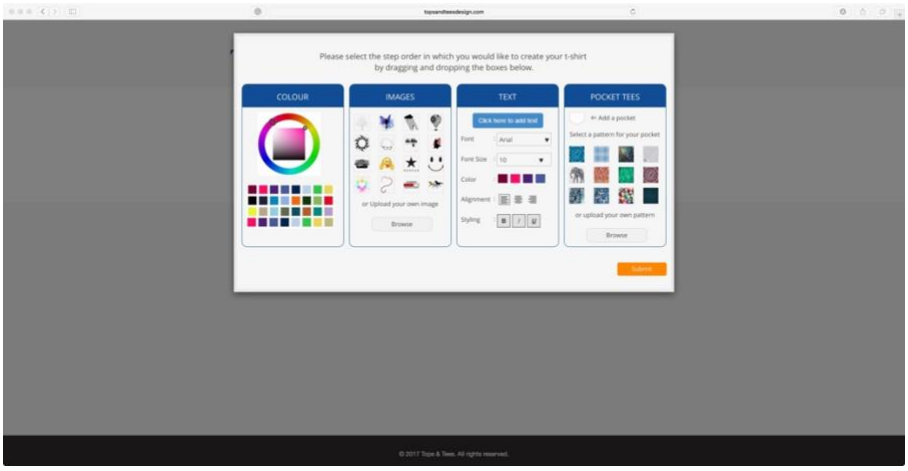
Click here to take the survey

Appendix 3 – Perspective-taking Scale

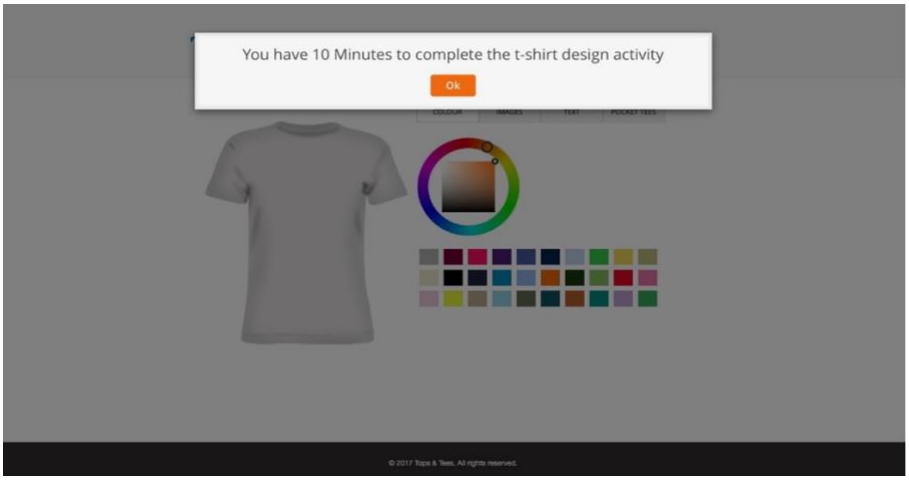
Paper and construct	Original Scale	Adapted Scale
Provision of perspective-taking for brand communities	1. My teacher is accepting when students express negative feelings about course material. 2. My teacher is open to hearing student criticism or complaints about activities and assignments. 3. My teacher is understanding when students express that course material is hard. 4. My teacher provides opportunities for students to ask questions.	1. The community is accepting when customers express their feelings about the design activity. 2. The community is open to hearing criticisms or complaints about the design activity. 3. The community is understanding when customers express that design activity is hard. 4. The community provides opportunities for customers to ask questions.

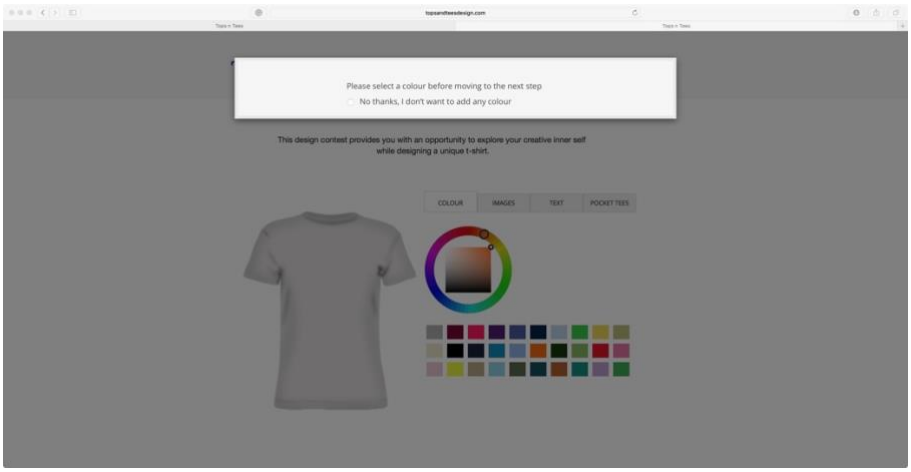
Appendix 4 – Experimental Conditions

Action Choice

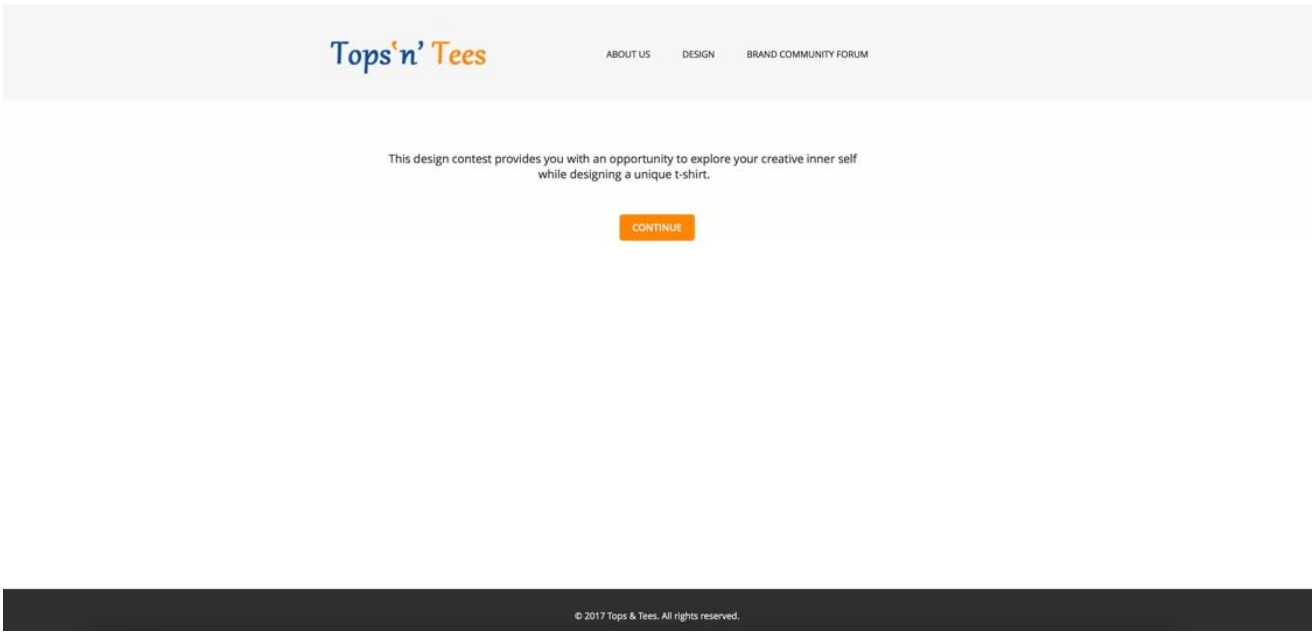


Option Choice

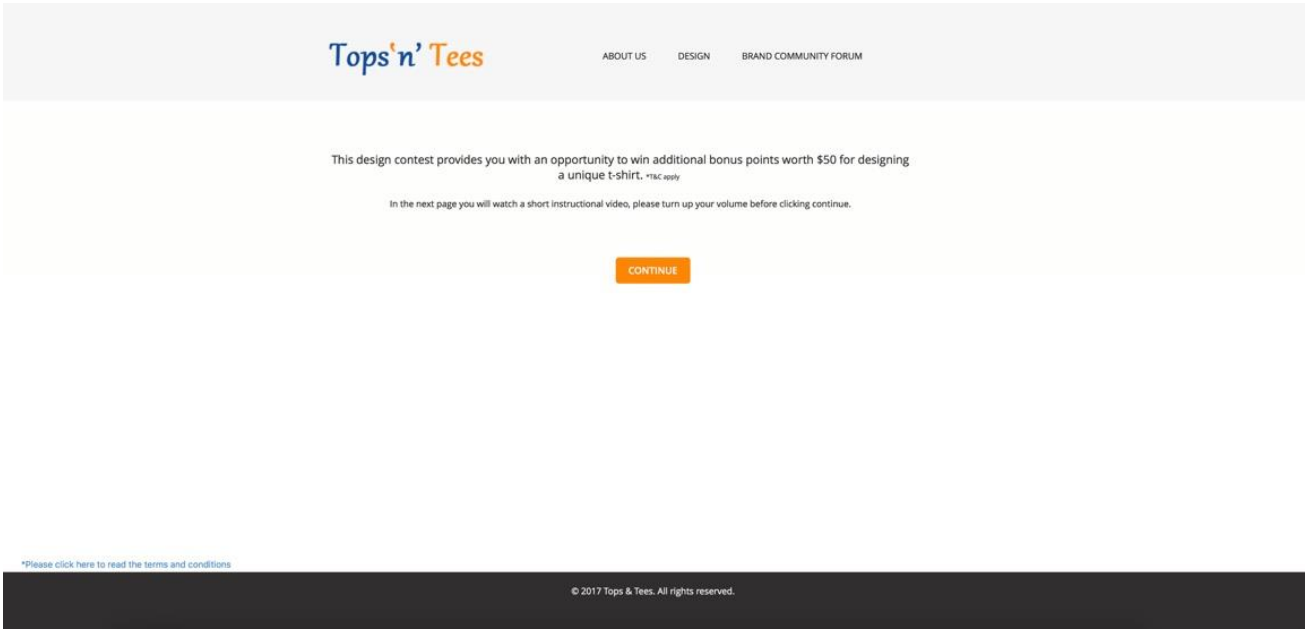




Intrinsic rationale



Extrinsic rationale



Appendix 5 – Scales for the Pre-Test

Paper and construct	Original Scale	Adapted Scale
Perceived action choices	1. My teacher allows me to choose how to do my work in the classroom (method). 2. My teacher encourages students to approach course assignments in their own way (method). 3. My teacher encourages me to work in my own way (method). 4. Our teacher asks us which topics we would like to study more and which we prefer to study less (effort). 5. When I am doing something that interests me, my teacher gives me enough time to finish it (pace). 6. My teacher does not allow me to work in my own pace (pace) (R).	1. The website allows me to choose what order I can design the t-shirt (method). 2. The website encourages me to arrange the order of the t-shirt design activity in my own way (method). 3. I have a choice to select the step order of the design activity (method). 4. I have a choice about the steps I engage in to design the t-shirt (effort).** 5. The website allows me to decide how much effort I want to expend on the t-shirt design activity (effort). 6. The website does not allow me to work in my own pace (pace) (R). 7. The website allows me to decide how much time I want to spend on the t-shirt design activity (pace).

Perceived option choices	1. I felt like I had a choice about which grids to do. 2. My teacher allows me to choose to study topics that interest me.	1. I have a choice about the colours I can select for the t-shirt. 2. I have a choice about the images I can insert on the t-shirt. 3. The website allows me to choose the text I want to insert on the t-shirt. 4. The website allows me to choose the colours to style the pocket on the t-shirt. 5. The website allows me to choose the patterns to style the pocket on the t-shirt.
Perceived perspective-taking	1. My teacher is accepting when students express negative feelings about course material. 2. My teacher is open to hearing student criticism or complaints about activities and assignments. 3. My teacher is understanding when students express that course material is hard. 4. My teacher listens carefully to students (Item dropped). 5. My teacher provides opportunities for students to ask questions (Item dropped).	1. The community members are accepting when customers express their feelings about the design activity. 2. The community members are open to hearing criticisms or complaints about the design activity. 3. The community members are understanding when customers express that design activity is hard.

Appendix 6 – Profile of Participants for Study 1

Demographics	Profile
Age	18-24 years= 12.2% 25-29 years = 11.8% 30-34 years = 11.1% 35-39 years = 12.1% 40-44 years = 12.4% 45-49 years = 11.1% 50-54 years = 10.5% 55-59 years = 10.5% 60-64 years = 7.8% 65 years or over = 0.7%
Gender	Male = 48.4% Female = 51.6%
Education	Less than High School = 1.3% High School = 35.6% Undergraduate Degree = 42.2% Master's Degree = 13.1% Doctoral Degree = 2.0% Professional Degree = 5.9%
Ethnic background	Caucasian = 80.4% African American = 9.2% Hispanic = 3.9% Asian = 2.6%

	Indian= 0.3% Aboriginal/Torres Strait Islander = 0.3% Pacific Islander = 0.3% Other = 3.3%
Income	Below $20,000 = 13.5% $20,000–$29,999 = 11.6% $30,000–$39,999 = 12.2% $40,000–$49,999 = 9.6% $50,000–$59,999 = 12.2% $60,000–$69,999 = 6.6% $70,000–$79,999 = 7.9% $80,000–$89,999 = 20.5% $90,000 or more = 5.9%

Appendix 7 – Scales for Main Study

Construct and Paper	Original Scale	Adapted Scale
	Mediators	
Perceptions of autonomy	1. I felt I was doing only what the teacher wanted me to do. ® 2. I felt I was doing what I wanted to be doing. 3. I felt I was pursuing goals that were my own. 4. While puzzle solving, I felt I was doing what I wanted to be doing 5. While puzzle solving, I felt a relaxed sense of personal freedom. 6. During the puzzle solving, I felt free. 7. During the puzzle solving, I felt pressured. ® 8. Throughout the puzzle solving, I had choices about what I would do next. 9. I believe I had a choice over which solution to try to solve. 10. I felt like it was my own choice as to which puzzle to solve. 11. I felt that I had control to decide which puzzle to solve.	1. I felt I was doing only what the website wanted me to do. ® 2. I felt I was doing what I wanted to be doing. 3. I felt I was pursuing goals that were my own. 4. While designing the t-shirt, I felt I was doing what I wanted to be doing. 5. While engaging in the t-shirt design activity, I felt a relaxed sense of personal freedom. 6. During the t-shirt design activity, I felt free. 7. During the t-shirt design activity, I felt pressured. ® 8. Throughout the t-shirt design activity, I had choices about what I would do next. 9. I believe I had choices in the t-shirt design activity. 10. I felt like it was my own choice as to which design to create for the t-shirt. 11. I felt that I had control to decide the design of the t-shirt.
Intrinsic motivation	I participated in this activity: 1. Because I think that this activity is interesting. 2. Because I think that this activity is pleasant. 3. Because this activity is fun. 4. Because I feel good when doing this activity.	I participated in the t-shirt design activity: 1. Because I think that t-shirt designing is interesting. 2. Because I think that t-shirt designing is pleasant. 3. Because t-shirt designing is fun. 4. Because I feel good when I am designing a t-shirt.

Dependent Variables		
Customer participation enjoyment	1. I enjoy the service process with my participation very much. 2. The service process with my participation is very enjoyable. 3. The service process with my participation can be described as fun. 4. I take great pleasure in the service process with my participation.	1. I enjoy the t-shirt design activity very much. 2. The t-shirt design activity is very enjoyable. 3. The t-shirt design activity can be described as fun. 4. I take great pleasure in designing a t-shirt.
Repeat participation intentions	1. Would you use this SST again if you had a choice? 2. What is the likelihood that you will choose to use this SST next time you need this service? 3. How likely would you be to use this SST in the future?	1. How likely are you to use this t-shirt design website again if you had a choice? 2. What is the likelihood that you will choose to use this website next time you need a t-shirt design service? 3. How likely would you be to use this t-shirt design website in the future?
Willingness to pay for the t-shirt		How much are you willing to pay for the t-shirt that you just created?
Control Variables		
Previous experience	I have a lot of experience in assembling furniture.	I have a lot of experience in designing t-shirts in an online platform.
Perceived coproduction Ability	1. I am fully capable of using this SST. 2. I am confident in my ability to use this SST. 3. Using this SST is well within the scope of my abilities.	1. I am fully capable of designing a t-shirt. 2. I am confident in my ability to design a t-shirt. 3. Designing a t-shirt is well within the scope of my abilities.
Trait autonomy	1. A. I always feel like I choose the things I do. B. I sometimes feel that it's not really me choosing the things I do. 2. A. My emotions sometimes seem alien to me. B. My emotions always seem to belong to me. 3. A. I choose to do what I have to do. B. I do what I have to, but I don't feel like it is	(No adaptation required)

really my choice.

4. A. I feel that I am rarely myself.

B. I feel like I am always completely myself.

5. A. I do what I do because it interests me.

B. I do what I do because I have to.

6. A. When I accomplish something, I often feel it wasn't really me who did it.

B. When I accomplish something, I always feel it's me who did it.

7. A. I am free to do whatever I decide to do.

B. What I do is often not what I'd choose to do.

8. A. My body sometimes feels like a stranger to me.

B. My body always feels like me.

9. A. I feel pretty free to do whatever I choose to.

B. I often do things that I don't choose to do.

10. A. Sometimes I look into the mirror and see a stranger.

B. When I look into the mirror I see myself.

Appendix 8 – Plain Language Statement for Main Study

THE UNIVERSITY OF MELBOURNE

FACULTY OF BUSINESS & ECONOMICS

Examining the Effectiveness of Online Engagement Platforms

Dear Sir/Madam,

My name is Triparna Gandhi from the Department of Management and Marketing at the University of Melbourne. I am currently undertaking a research project as a part of my PhD studies under the supervision of Professor Liliana Bove and Associate Professor Anish Nagpal. **The aim of this research project is to understand the effectiveness of online engagement platforms.**

We invite you to complete a **short online survey after you have participated in a short t-shirt design activity**. It is expected that the **t-shirt design activity and the questionnaire will take about 10-15 minutes to complete.**

If you consent to participate **your responses will be kept anonymous and confidential,** subject to legal requirements. The information you provide will be used solely for the purpose of this research project and only aggregated results will be published in reputable academic journals. No persons other than the research team will have access to the information you provide. The data will be securely stored for a minimum of five years after publication.

This study has received clearance from the University of Melbourne Human Research Ethics Committee. Your participation in this research project is entirely voluntary and if you choose to participate, you may withdraw at any time without explanation or penalty. Any incomplete survey data will not be saved.

Should you require any further information, or have any concerns, please do not hesitate to contact either of the researchers; Triparna Gandhi on +61 3 9035 4728 or tgandhi@student.unimelb.edu.au, Professor Liliana Bove on +61 3 9035 5512 or lbove@unimelb.edu.au, Associate Professor Anish Nagpal on +61 3 8344 1850 or anagpal@unimelb.edu.au.

We greatly value your co-operation. Thank you in advance for your participation in this research project.

Triparna Gandhi
PhD Candidate
University of Melbourne

This study adheres to the strict ethical rules of The University of Melbourne. Whilst you are free to discuss your participation in this study with the researchers (see contact details above), if you would like to speak to an officer of the University not directly involved in the study, you may contact the Executive Officer, Human Research Ethics, The University of Melbourne, VIC 3010. Tel: (03) 8344 2073.

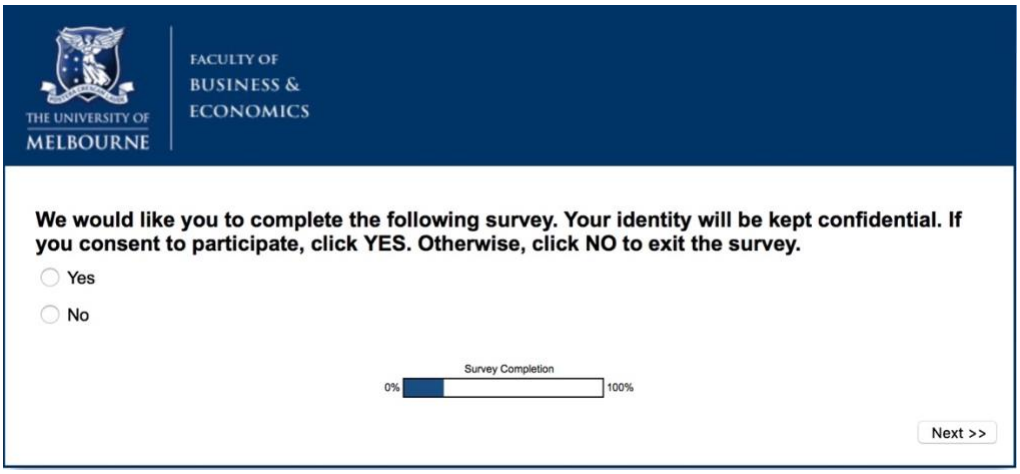
HREC project number: 1545269.1 *Date: 29/10/2015*

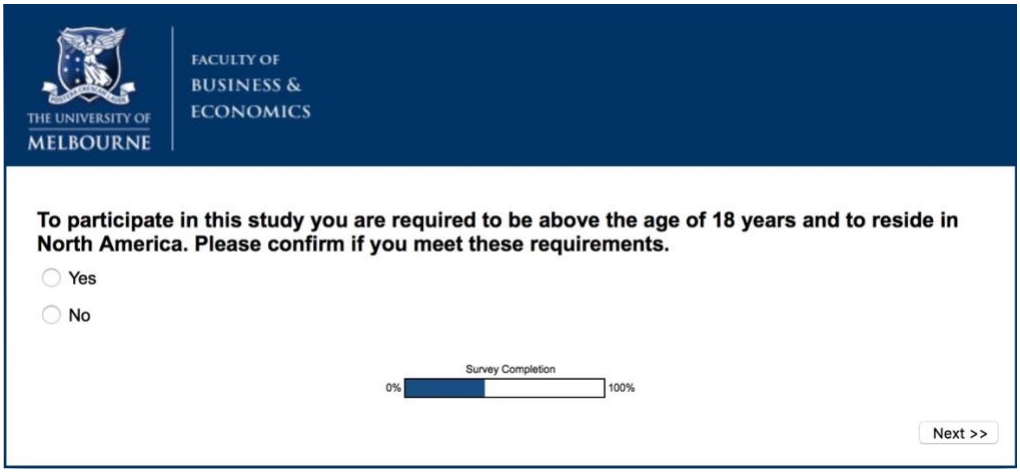
Survey Completion

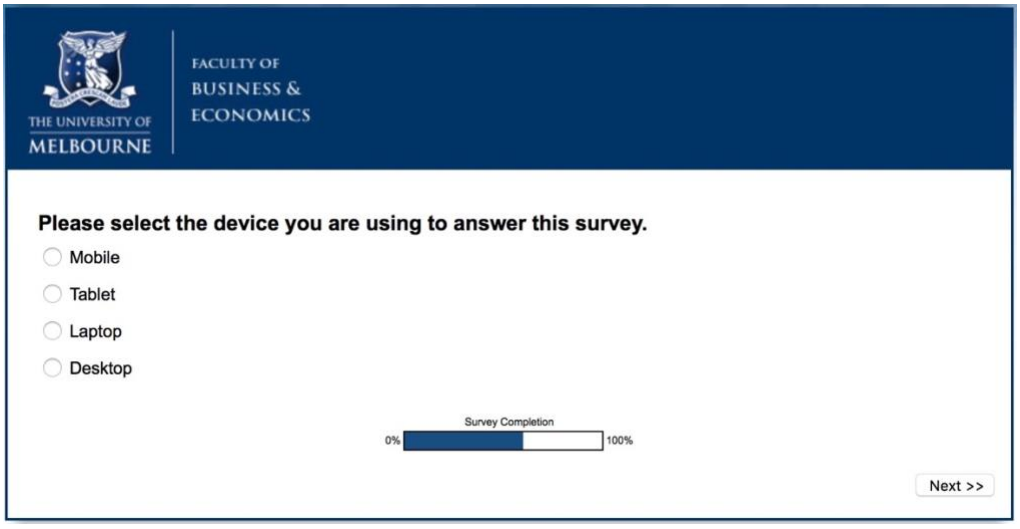
0% 100%

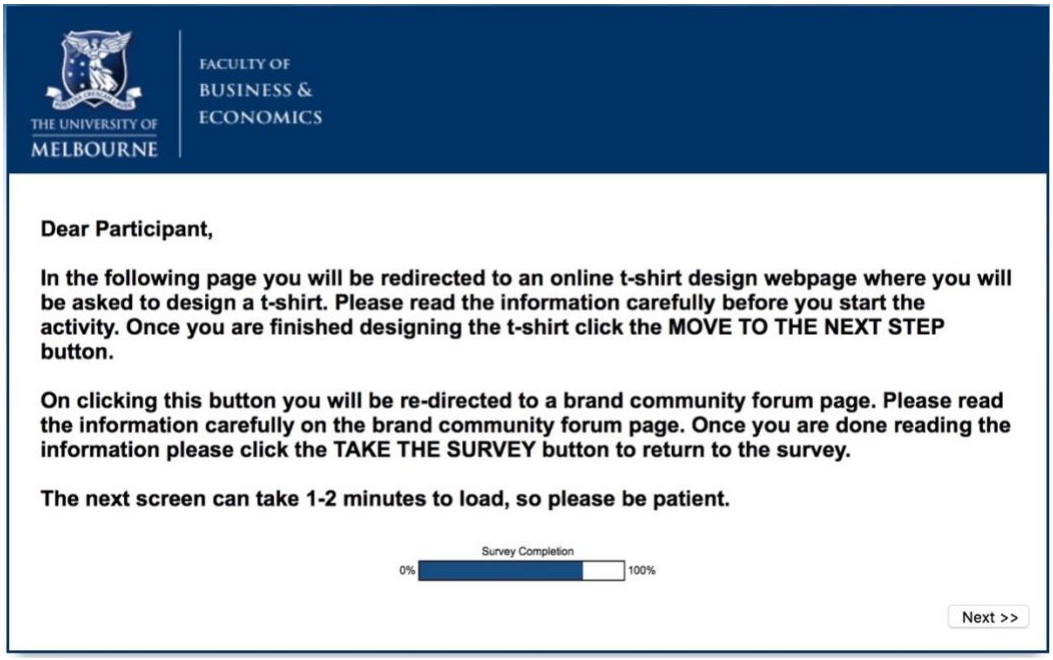
Next >>

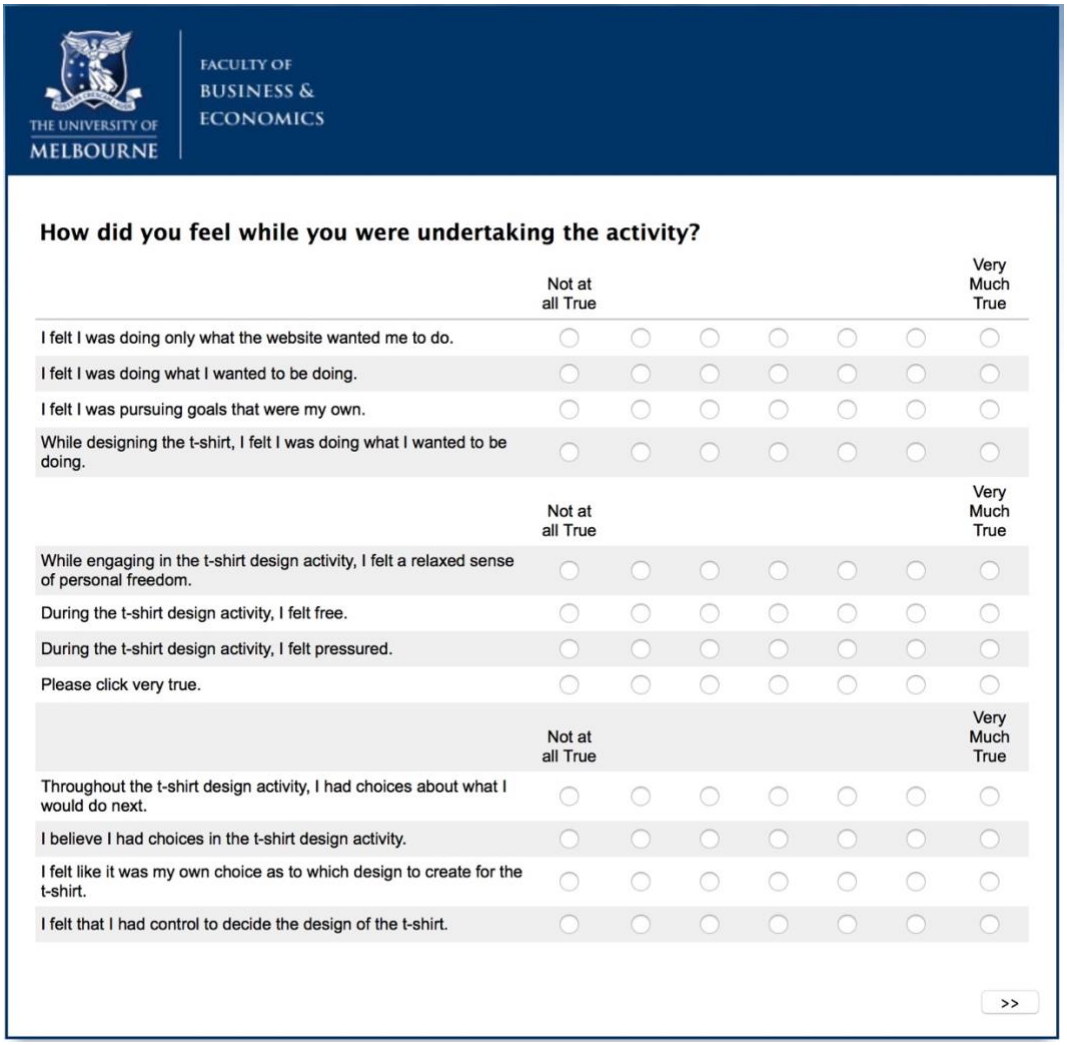
Appendix 9 – Survey for Study 1

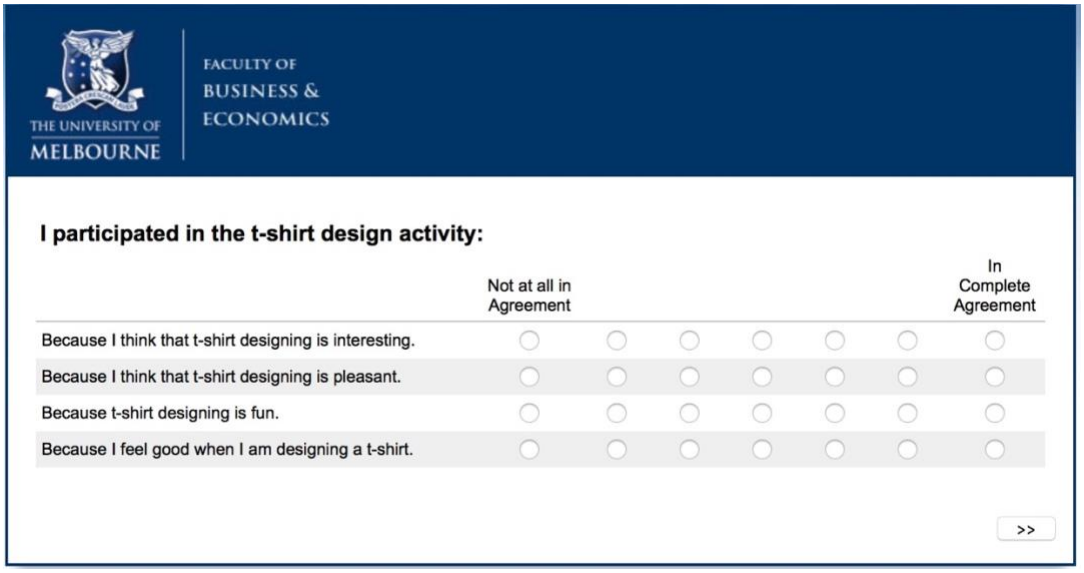







THE UNIVERSITY OF MELBOURNE
FACULTY OF BUSINESS & ECONOMICS
Dear Participant,
In the following page you will be redirected to an online t-shirt design webpage where you will be asked to design a t-shirt. Please read the information carefully before you start the activity. Once you are finished designing the t-shirt click the MOVE TO THE NEXT STEP button.
On clicking this button you will be re-directed to a brand community forum page. Please read the information carefully on the brand community forum page. Once you are done reading the information please click the TAKE THE SURVEY button to return to the survey.
The next screen can take 1-2 minutes to load, so please be patient.
Survey Completion
0%
100%
Next >>


THE UNIVERSITY OF MELBOURNE
FACULTY OF BUSINESS & ECONOMICS
How did you feel while you were undertaking the activity?
Not at all True
Very Much True
I felt I was doing only what the website wanted me to do.
I felt I was doing what I wanted to be doing.
I felt I was pursuing goals that were my own.
While designing the t-shirt, I felt I was doing what I wanted to be doing.
Not at all True
Very Much True
While engaging in the t-shirt design activity, I felt a relaxed sense of personal freedom.
During the t-shirt design activity, I felt free.
During the t-shirt design activity, I felt pressured.
Please click very true.
Not at all True
Very Much True
Throughout the t-shirt design activity, I had choices about what I would do next.
I believe I had choices in the t-shirt design activity.
I felt like it was my own choice as to which design to create for the t-shirt.
I felt that I had control to decide the design of the t-shirt.
>>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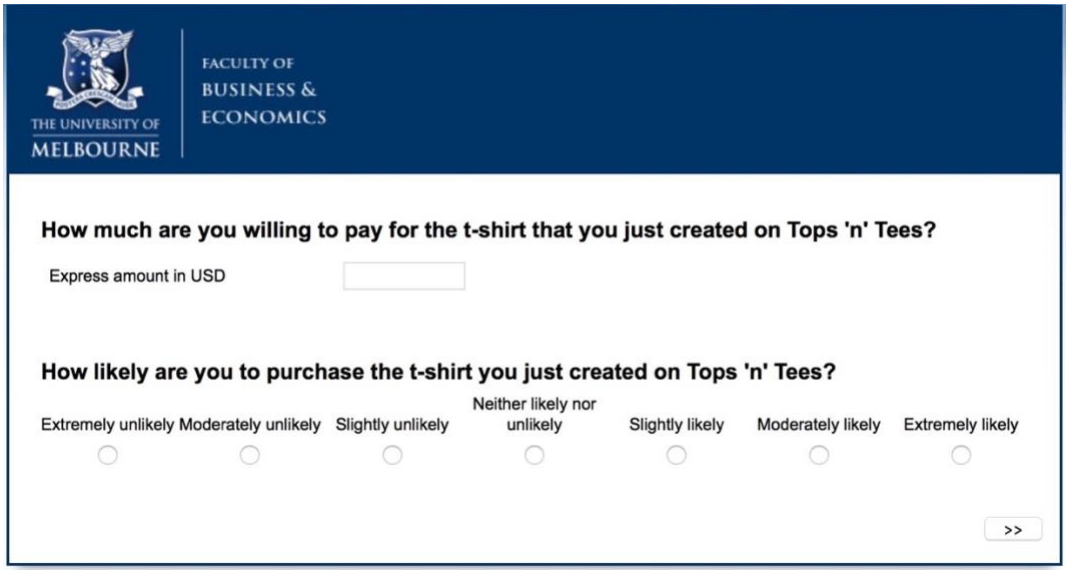
I participated in the t-shirt design activity:
Not at all in Agreement
In Complete Agreement
Because I think that t-shirt designing is interesting.
Because I think that t-shirt designing is pleasant.
Because t-shirt designing is fun.
Because I feel good when I am designing a t-shirt.
>>


THE UNIVERSITY OF MELBOURNE
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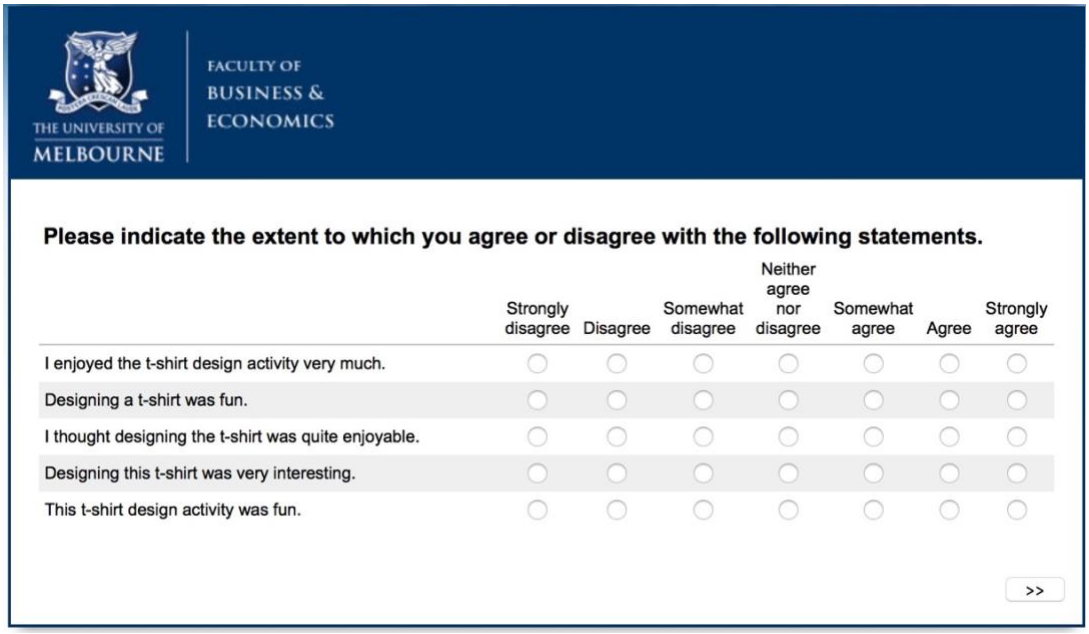
How much are you willing to pay for the t-shirt that you just created on Tops 'n' Tees?
Express amount in USD
How likely are you to purchase the t-shirt you just created on Tops 'n' Tees?
Extremely unlikely
Moderately unlikely
Slightly unlikely
Neither likely nor unlikely
Slightly likely
Moderately likely
Extremely likely
>>



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Please indicate the extent to which you agree or disagree with the following statements.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I enjoyed the t-shirt design activity very much.	○	○	○	○	○	○	○
Designing a t-shirt was fun.	○	○	○	○	○	○	○
I thought designing the t-shirt was quite enjoyable.	○	○	○	○	○	○	○
Designing this t-shirt was very interesting.	○	○	○	○	○	○	○
This t-shirt design activity was fun.	○	○	○	○	○	○	○

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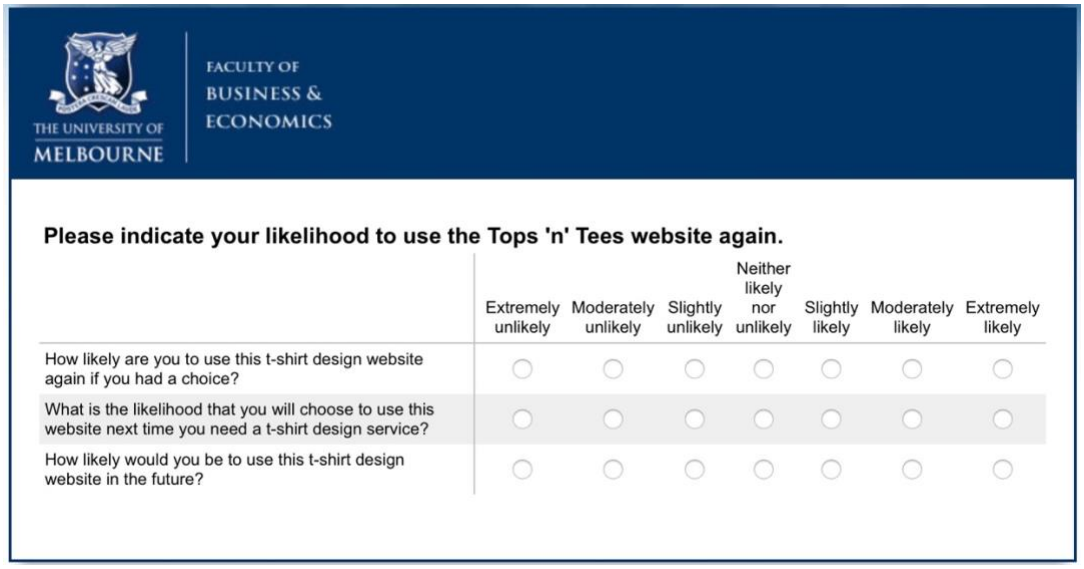

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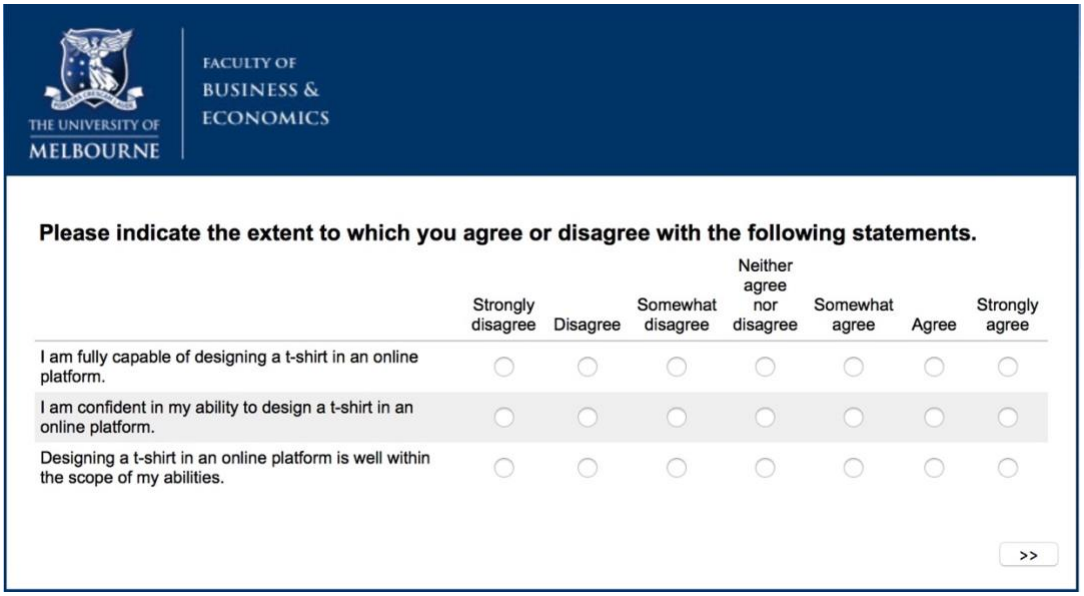
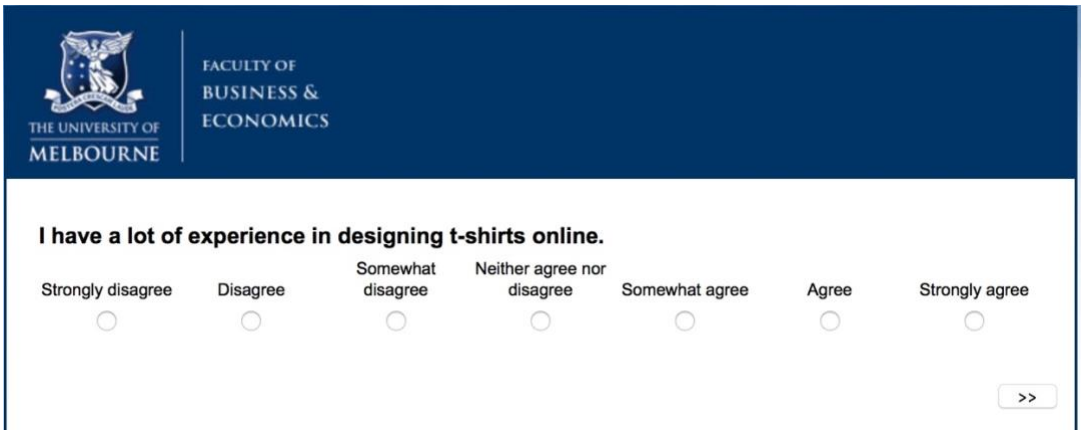
Please indicate your likelihood to use the Tops 'n' Tees website again.

	Extremely unlikely	Moderately unlikely	Slightly unlikely	Neither likely nor unlikely	Slightly likely	Moderately likely	Extremely likely
How likely are you to use this t-shirt design website again if you had a choice?	○	○	○	○	○	○	○
What is the likelihood that you will choose to use this website next time you need a t-shirt design service?	○	○	○	○	○	○	○
How likely would you be to use this t-shirt design website in the future?	○	○	○	○	○	○	○


THE UNIVERSITY OF MELBOURNE
FACULTY OF BUSINESS & ECONOMICS
Please indicate the extent to which you agree or disagree with the following statements.
Strongly disagree
Disagree
Somewhat disagree
Neither agree nor disagree
Somewhat agree
Agree
Strongly agree
I am fully capable of designing a t-shirt in an online platform.
I am confident in my ability to design a t-shirt in an online platform.
Designing a t-shirt in an online platform is well within the scope of my abilities.
>>


THE UNIVERSITY OF MELBOURNE
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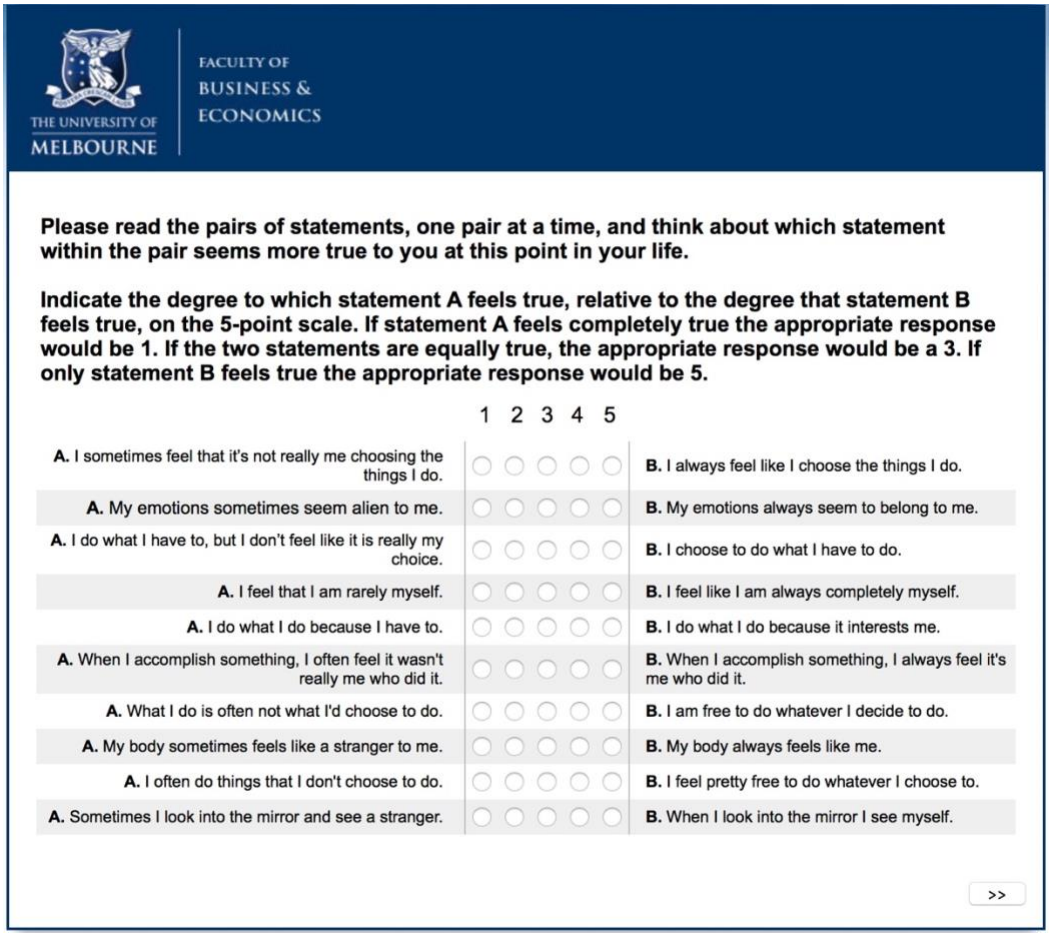
I have a lot of experience in designing t-shirts online.
Strongly disagree
Disagree
Somewhat disagree
Neither agree nor disagree
Somewhat agree
Agree
Strongly agree
>>



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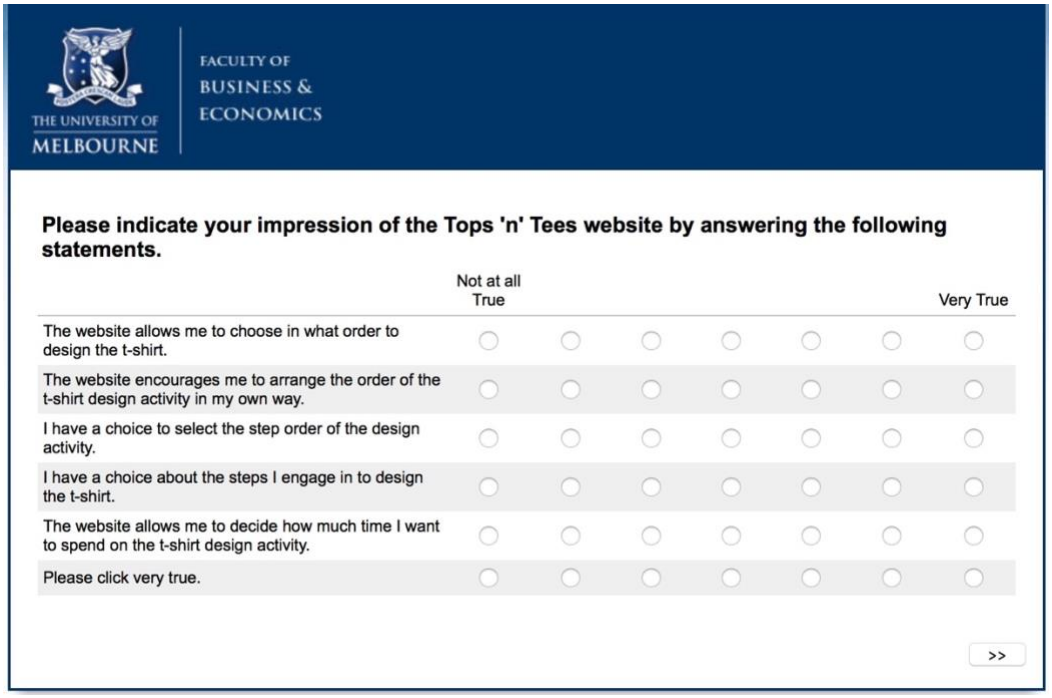
Please read the pairs of statements, one pair at a time, and think about which statement within the pair seems more true to you at this point in your life.

Indicate the degree to which statement A feels true, relative to the degree that statement B feels true, on the 5-point scale. If statement A feels completely true the appropriate response would be 1. If the two statements are equally true, the appropriate response would be a 3. If only statement B feels true the appropriate response would be 5.

	1	2	3	4	5	
A. I sometimes feel that it's not really me choosing the things I do.	○	○	○	○	○	**B.** I always feel like I choose the things I do.
A. My emotions sometimes seem alien to me.	○	○	○	○	○	**B.** My emotions always seem to belong to me.
A. I do what I have to, but I don't feel like it is really my choice.	○	○	○	○	○	**B.** I choose to do what I have to do.
A. I feel that I am rarely myself.	○	○	○	○	○	**B.** I feel like I am always completely myself.
A. I do what I do because I have to.	○	○	○	○	○	**B.** I do what I do because it interests me.
A. When I accomplish something, I often feel it wasn't really me who did it.	○	○	○	○	○	**B.** When I accomplish something, I always feel it's me who did it.
A. What I do is often not what I'd choose to do.	○	○	○	○	○	**B.** I am free to do whatever I decide to do.
A. My body sometimes feels like a stranger to me.	○	○	○	○	○	**B.** My body always feels like me.
A. I often do things that I don't choose to do.	○	○	○	○	○	**B.** I feel pretty free to do whatever I choose to.
A. Sometimes I look into the mirror and see a stranger.	○	○	○	○	○	**B.** When I look into the mirror I see myself.

>>



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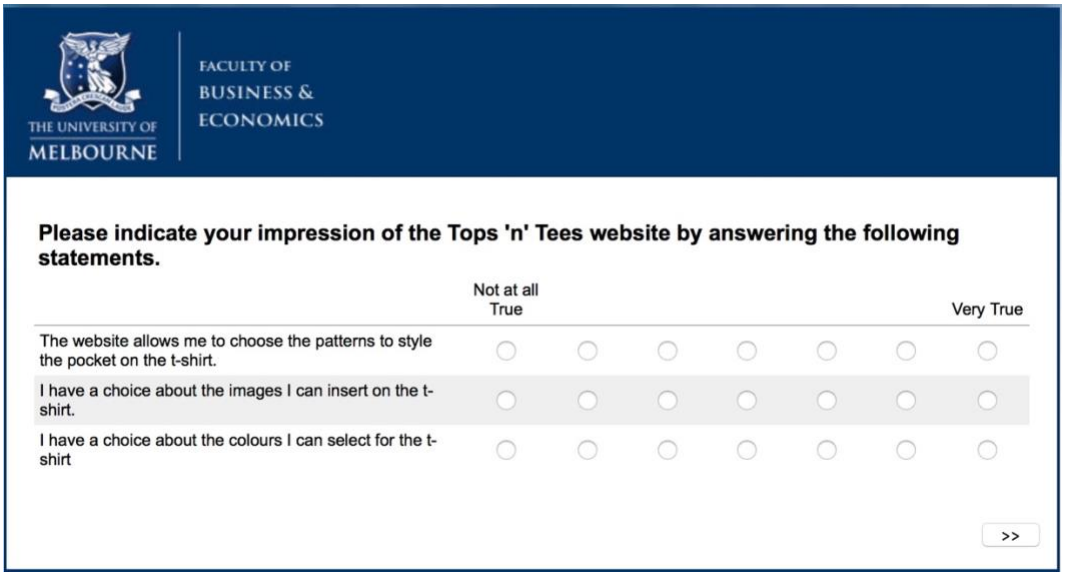
Please indicate your impression of the Tops 'n' Tees website by answering the following statements.

	Not at all True						Very True
The website allows me to choose in what order to design the t-shirt.	○	○	○	○	○	○	○
The website encourages me to arrange the order of the t-shirt design activity in my own way.	○	○	○	○	○	○	○
I have a choice to select the step order of the design activity.	○	○	○	○	○	○	○
I have a choice about the steps I engage in to design the t-shirt.	○	○	○	○	○	○	○
The website allows me to decide how much time I want to spend on the t-shirt design activity.	○	○	○	○	○	○	○
Please click very true.	○	○	○	○	○	○	○

>>


THE UNIVERSITY OF MELBOURNE
FACULTY OF BUSINESS & ECONOMICS
Please indicate your impression of the Tops 'n' Tees website by answering the following statements.
Not at all True
Very True
The website allows me to choose the patterns to style the pocket on the t-shirt.
I have a choice about the images I can insert on the t-shirt.
I have a choice about the colours I can select for the t-shirt
>>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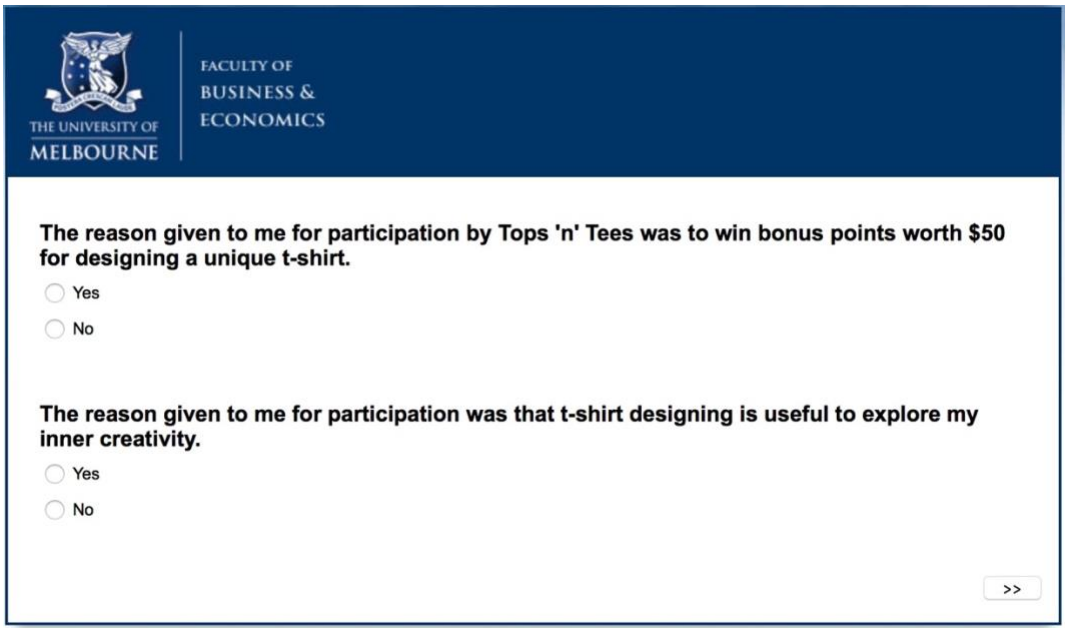
Did Tops 'n' Tees provide you with an opportunity for participating in the t-shirt design?
Yes
No
>>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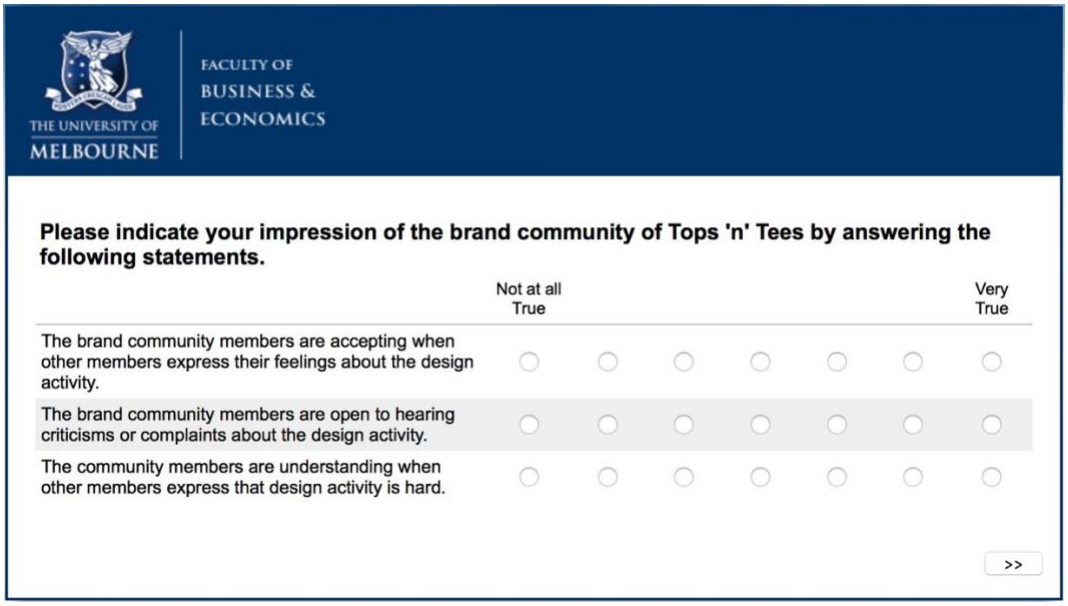
The reason given to me for participation by Tops 'n' Tees was to win bonus points worth $50 for designing a unique t-shirt.
Yes
No
The reason given to me for participation was that t-shirt designing is useful to explore my inner creativity.
Yes
No
>>



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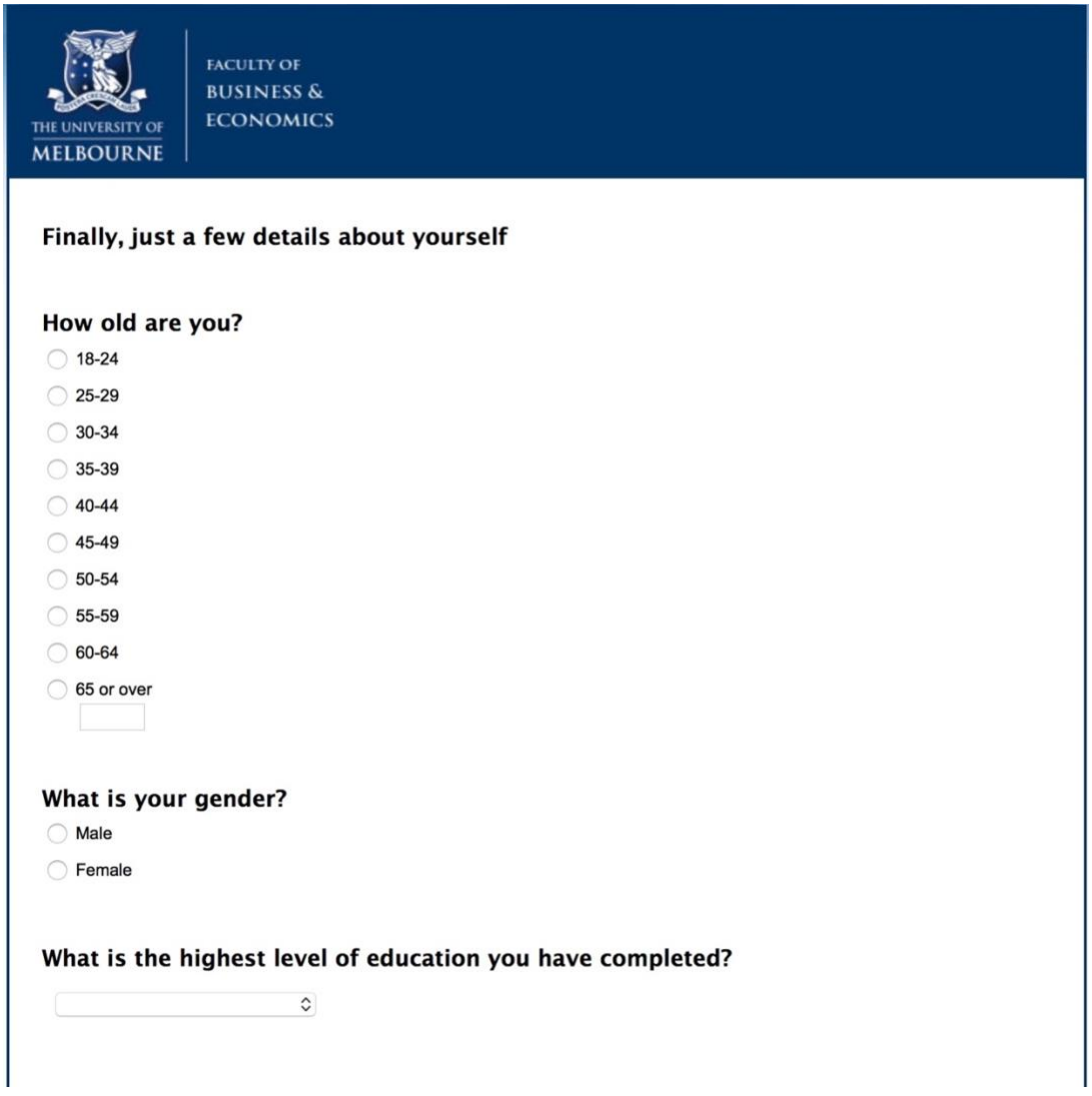
Please indicate your impression of the brand community of Tops 'n' Tees by answering the following statements.

	Not at all True						Very True
The brand community members are accepting when other members express their feelings about the design activity.	○	○	○	○	○	○	○
The brand community members are open to hearing criticisms or complaints about the design activity.	○	○	○	○	○	○	○
The community members are understanding when other members express that design activity is hard.	○	○	○	○	○	○	○

>>



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Finally, just a few details about yourself

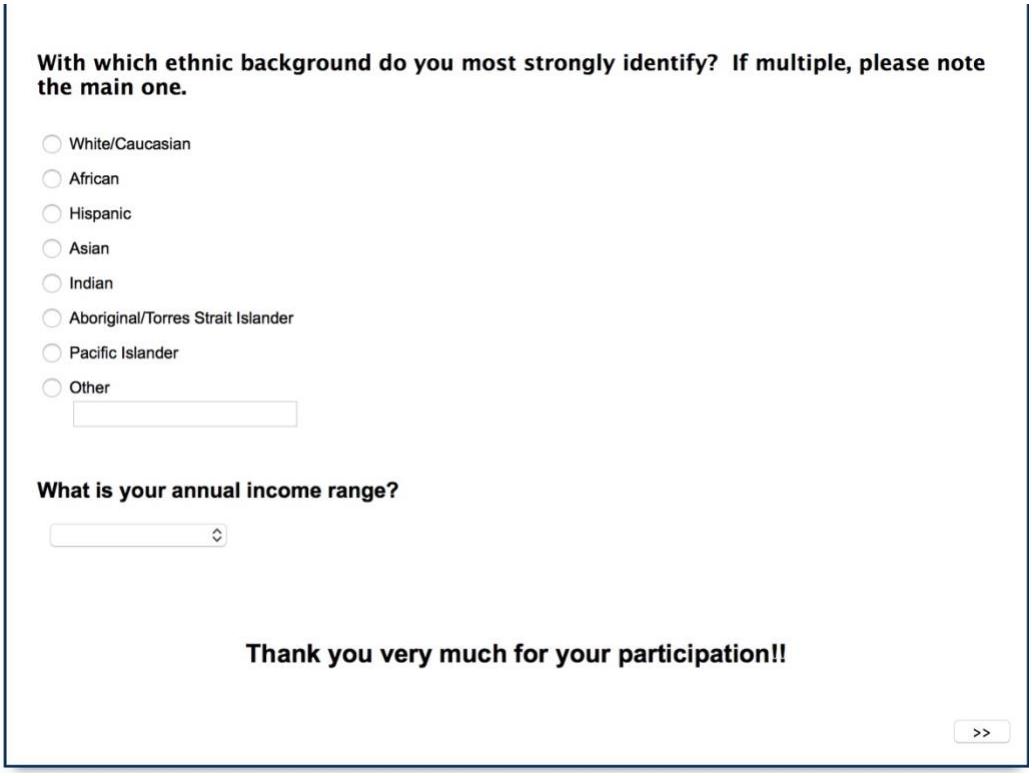
How old are you?

- ○ 18-24
- ○ 25-29
- ○ 30-34
- ○ 35-39
- ○ 40-44
- ○ 45-49
- ○ 50-54
- ○ 55-59
- ○ 60-64
- ○ 65 or over

What is your gender?

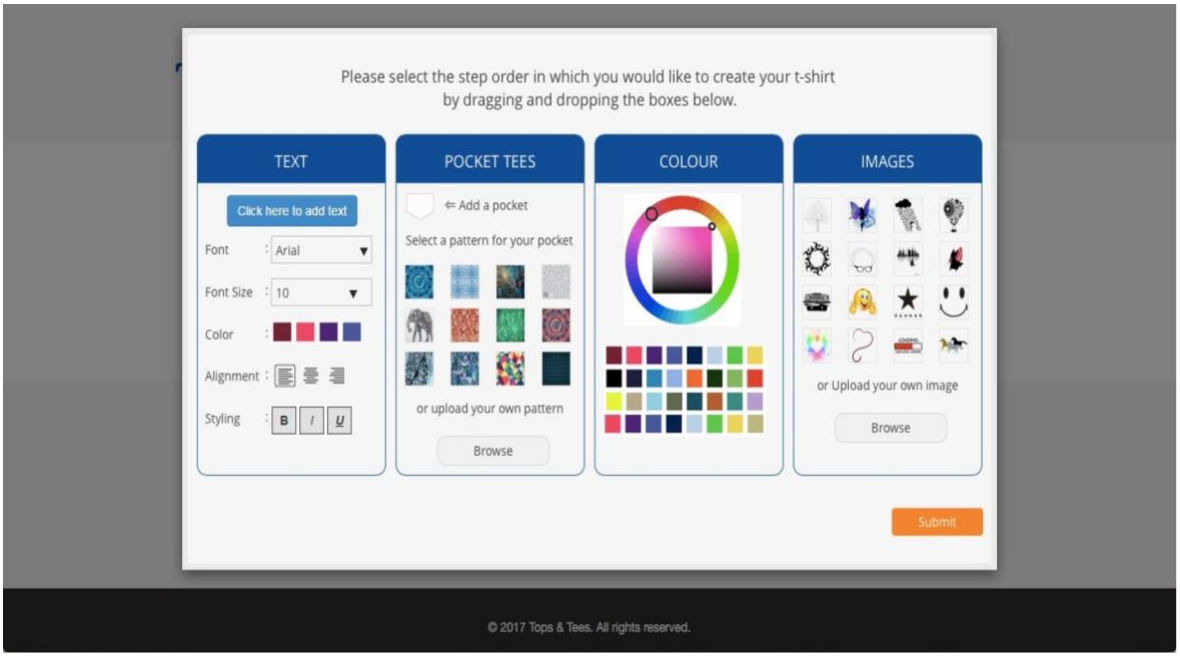
- ○ Male
- ○ Female

What is the highest level of education you have completed?

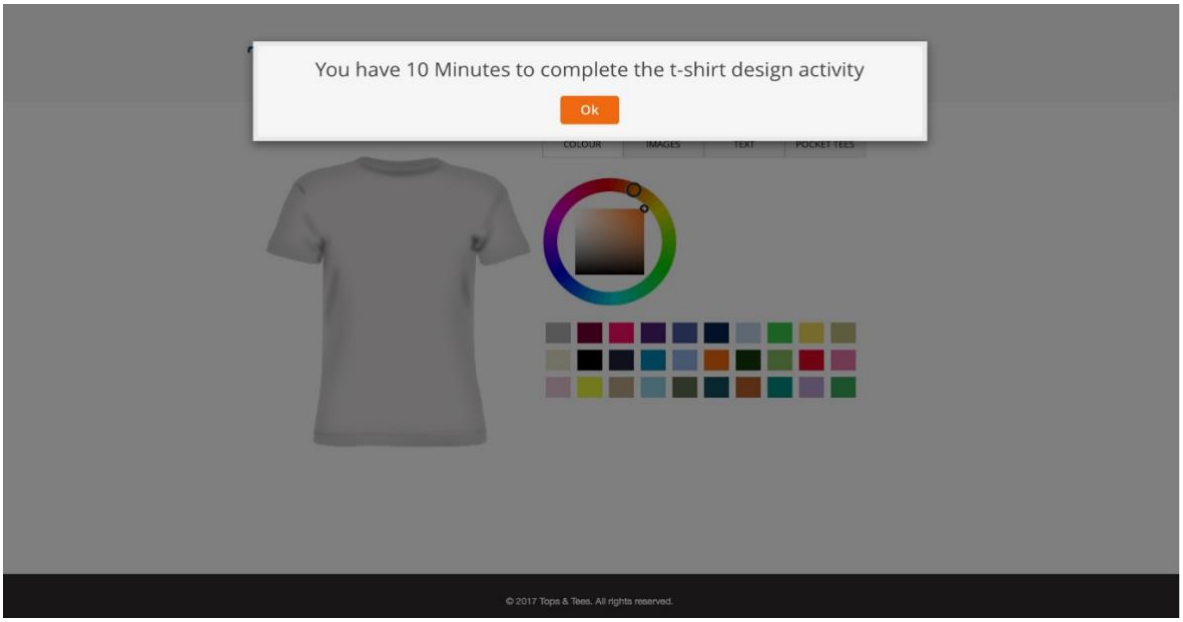

With which ethnic background do you most strongly identify? If multiple, please note the main one.
White/Caucasian
African
Hispanic
Asian
Indian
Aboriginal/Torres Strait Islander
Pacific Islander
Other
What is your annual income range?
Thank you very much for your participation!!
>>

Appendix 10 – Experimental Conditions for Study 2

Choice in method



Restriction for pace



Appendix 11 – Scales for pre-test Study 2

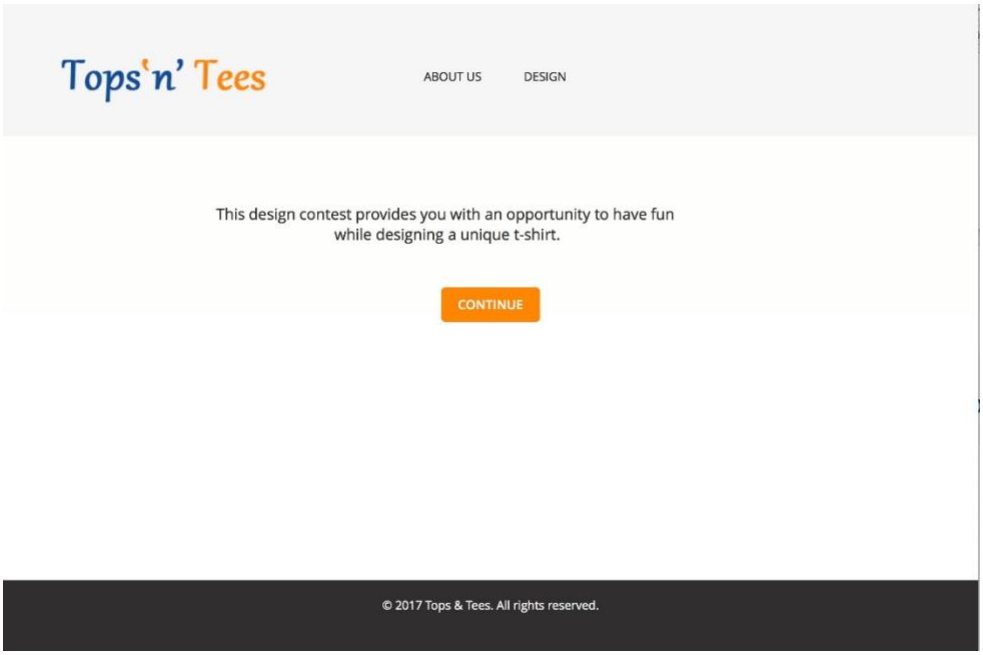
Construct	Original Scale	Adapted Scale
Perceived choice in method	1. My teacher allows me to choose how to do my work in the classroom. 2. My teacher encourages me to work in my own way.	1. The website allows me to choose the order I can design the t-shirt. 2. The website encourages me to arrange the order of the t-shirt design activity in my own way. 3. I have a choice to select the step order of the design activity.
Perceived choice in pace	1. When I am doing something that interests me, my teacher gives me enough time to finish it 2. My teacher does not allow me to work at my own pace.	1. I am allowed enough time to design my t-shirt. 2. The website allowed me to work at my own pace. 3. The website allows me to decide how much time I want to spend on the t-shirt design activity.

Appendix 12 – Profile of Participants for Study 2

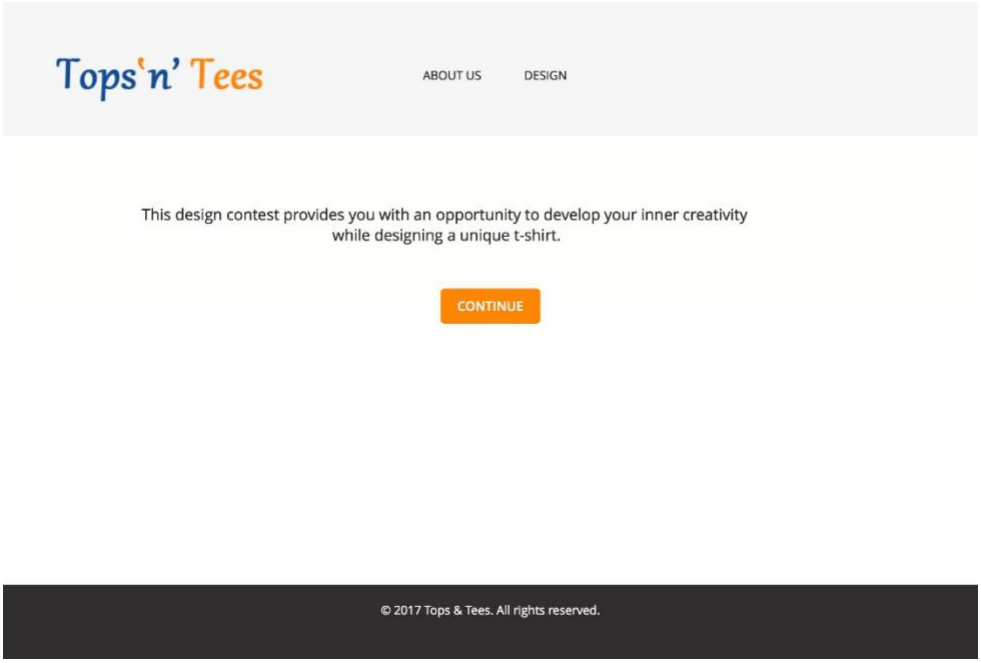
Demographics	Profile
Age	18-24 years= 98.9% 25-29 years = 0.5% 30-34 years = 0.5%
Gender	Male = 41.4% Female = 58.6%
Ethnic background	Caucasian = 31.2% African American = 0.5% Hispanic = 1.1% Asian = 59.1% Indian= 4.8% Middle Eastern = 3.2%
Income	Below $20,000 = 90.9% $20,000–$29,999 = 6.5% $30,000–$39,999 = 1.6% $40,000–$49,999 = 1.1%

Appendix 13 – Experimental Conditions for Study 3

Hedonic Rationale Condition



Personal Development Rationale Condition

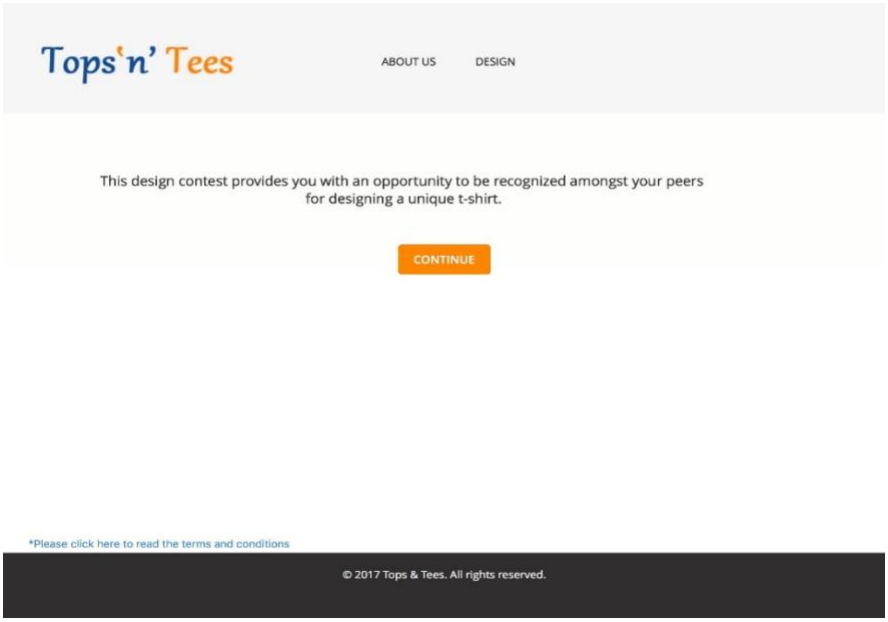


Appendix 14 – Profile of Participants for Study 3

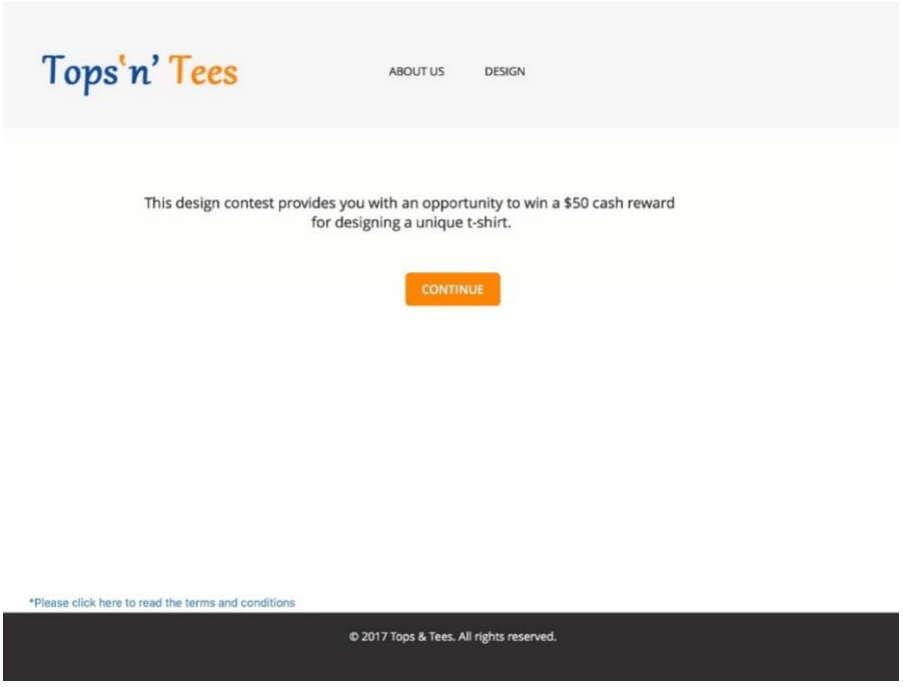
Demographics	Profile
Age	18-24 years= 99% 25-29 years = 1%
Gender	Male = 40.4% Female = 59.6%
Ethnic background	Caucasian = 27.9% Asian = 56.7% Indian= 8.7% Middle Eastern = 4.8% Pacific Islander = 1.0% Aboriginal/Torres Strait Islander = 1.0%
Income	Below $20,000 = 90.4% $20,000–$29,999 = 6.7% $30,000–$39,999 = 1% $40,000–$49,999 = 1.9%

Appendix 15 – Experimental Conditions for Study 4

Recognition Rationale Condition



Monetary Rationale Condition

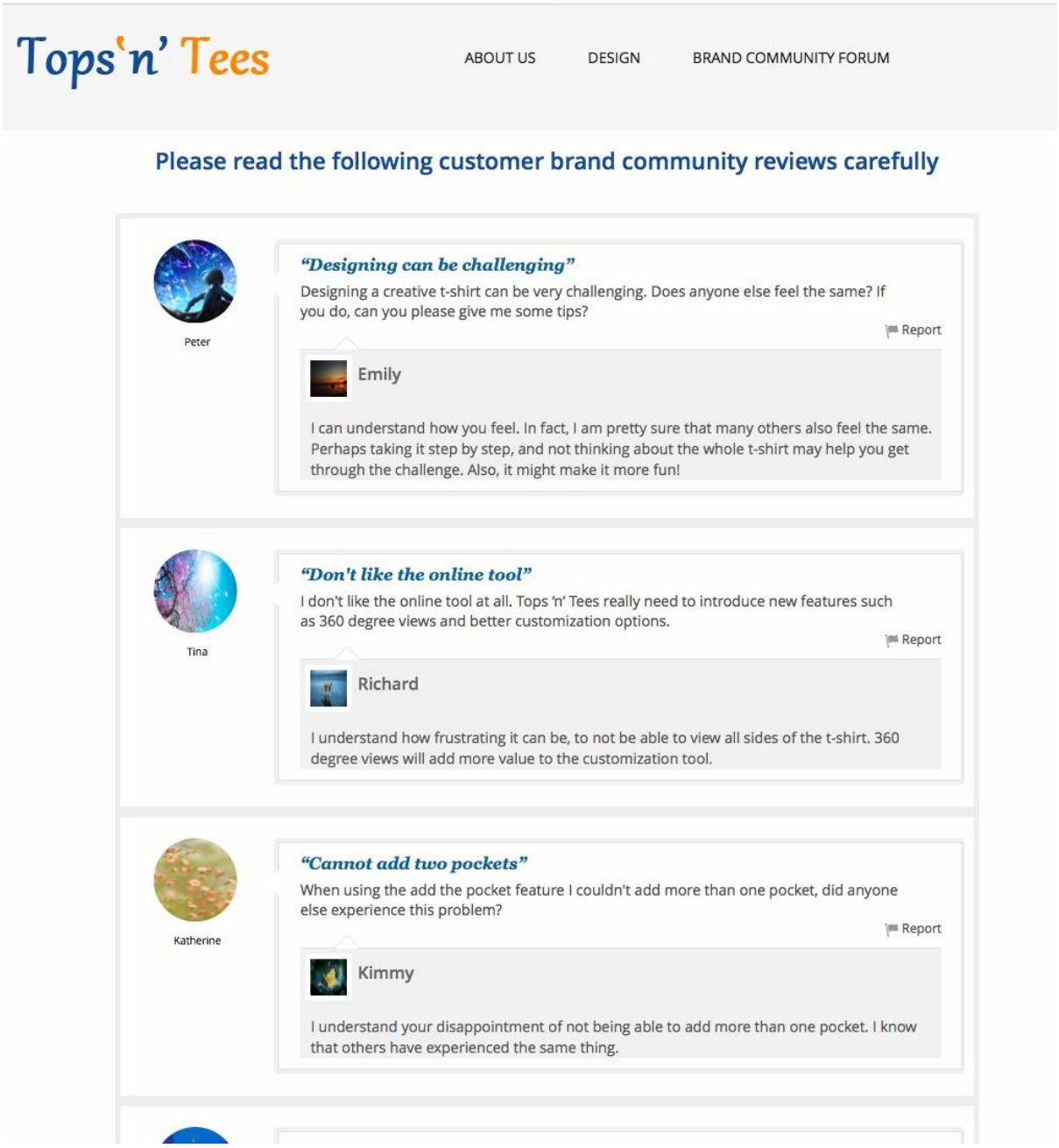


Appendix 16 – Profile of Participants for Study 4

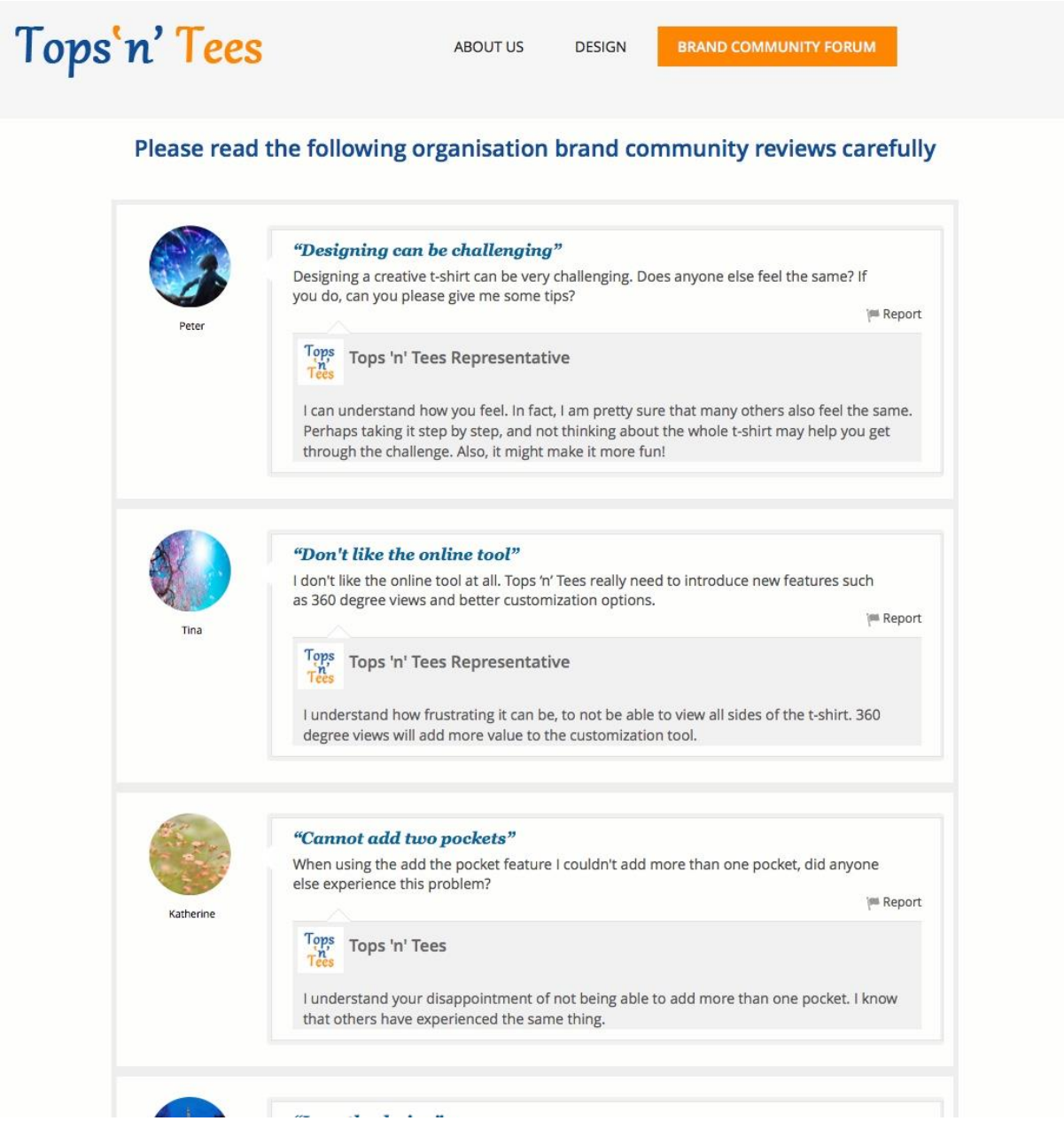
Demographics	Profile
Age	18-24 years= 98.8% 25-29 years = 1.2%
Gender	Male = 26.2% Female = 73.8%
Ethnic background	Caucasian = 31.0% Asian = 65.5% Indian= 2.4% Middle Eastern = 1.2%
Income	Below $20,000 = 93.8% $20,000–$29,999 = 2.5% $30,000–$39,999 = 1.3% $40,000–$49,999 = 1.3% $70,000–$79,999 = 1.3%

Appendix 17 – Experimental Conditions for Study 5

Customer Brand Communities



Organisation Brand Communities



Appendix 18 – Profile of Participants for Study 5

Demographics	Profile
Age	18-24 years= 100%
Gender	Male = 42.1% Female = 57.9%
Ethnic background	Caucasian = 31.6% Asian = 60% Indian= 3.2% Hispanic = 1.1% Middle Eastern = 4.2%
Income	Below $20,000 = 89.5% $20,000–$29,999 = 6.3% $30,000–$39,999 = 1.1% $40,000–$49,999 = 2.1% $70,000–$79,999 = 1.1%

Appendix 19 – Profile of Participants for Study 6

Demographics	Profile
Age	18-24 years= 6.9% 25-29 years = 20.4% 30-34 years = 24.0% 35-39 years = 13.8% 40-44 years = 9.5% 45-49 years = 8.6% 50-54 years = 7.9% 55-59 years = 3.6% 60-64 years = 2.3% 65 years or over = 3%
Gender	Male = 49% Female = 51%
Education	Less than High School = 0.3% High School = 24.3% Undergraduate Degree = 56.2% Master's Degree = 16.8% Doctoral Degree = 2.6% Professional Degree = 1.3%
Ethnic background	Caucasian = 74.3% African American = 9.5% Hispanic = 3.6% Asian = 8.2%

	Indian = 1.3% Aboriginal/Torres Strait Islander = 0.7% Pacific Islander = 0.7% Middle Eastern= 1.6%
Income	Below $20,000 = 14.8% $20,000–$29,999 = 15.5% $30,000–$39,999 = 14.5% $40,000–$49,999 = 11.2 % $50,000–$59,999 = 13.8% $60,000–$69,999 = 10.9% $70,000–$79,999 = 7.9% $80,000–$89,999 = 5.9% $90,000 or more = 5.6%

Appendix 20 – Additional scales used in Study 6

Construct and Paper	Original Scale	Adapted Scale
Mediator		
Cognitive customer engagement	1. At work, my mind is focused on my job 2. At work, I pay a lot of attention to my job 3. At work, I focus a great deal of attention on my job 4. At work, I am absorbed by my job 5. At work, I concentrate on my job 6. At work, I devote a lot of attention to my job	1. During the activity, my mind was focused on designing the t-shirt 2. During the activity, I paid a lot of attention to the t-shirt design 3. During the activity, I focused a great deal of attention on designing the t-shirt 4. During the activity, I was absorbed while designing the t-shirt 5. During the activity, I concentrated on designing the t-shirt 6. During the activity, I devoted a lot of attention to designing the t-shirt
Dependent Variable		
Outcome Quality	Overall, how would you rate the service quality of the X	Overall, how would you rate the quality of the t-shirt you designed?

	experience?	
Control Variable		
Customer product category involvement	1. Unexciting- Exciting 2. Fun– Not fun 3. Appealing- Unappealing 4. Boring- Interesting 5. Unimportant- Important 6. Not essential–Essential	To me, t-shirt designing is: 1. Unexciting- Exciting 2. Fun– Not fun 3. Appealing- Unappealing 4. Boring- Interesting 5. Unimportant- Important 6. Not essential–Essential