Customer compliance with employee fuzzy requests in service encounters: a self-determination theory perspective

Teng Teng¹ · Shengliang Zhang¹ · Xiaodong Li^{2,3,4} · Yuan Chen¹

Received: 31 January 2019 / Accepted: 4 February 2020 / Published online: 24 February 2020
© The Author(s) 2020

Abstract

This research proposes a theoretical model to explain customer compliance with employee fuzzy requests in service encounters from a self-determination theory perspective. Utilizing data collected from 382 car-hailing users in south China, the model was examined through partial least squares structural equation modeling. Results revealed that identified and integrated regulations are positively related to customer compliance. Furthermore, identified regulation is positively affected by sense of relatedness, while integrated regulation is positively influenced by perceived autonomy support, self-efficacy, and sense of relatedness. This study provides important implications for scholars and managers by establishing a self-determination mechanism.

Keywords Customer compliance · Fuzzy requests · Self-determination theory · Service encounters · Autonomous motivation

1 Introduction

Over the past decades, scholars studying service encounters have focused on customer requests and their causes and effects (Hartline et al. 2000; Wang et al. 2012; Beatty et al. 2016). By making requests, customers attempt to control the service process to meet their needs to the greatest extent possible (Bateson 1985). The employees' fulfillment of these requests can enhance customers' perceived

✉ Xiaodong Li
lixiaodong@ahpu.edu.cn

¹ School of Management, University of Science and Technology of China, Hefei, China

² School of Management and Engineering, Anhui Polytechnic University, Wuhu, China

³ Antai College of Economics and Management, Shanghai Jiao Tong University, Shanghai, China

⁴ Gamification Group, Faculty of IT and Communication Science, Tampere University, Tampere, Finland

service quality and can nurture or maintain customer relationships (Ferreira et al. 2011; Wang et al. 2012; Nasurdin et al. 2015). However, employees can also make requests to customers to improve their service capacity and efficiency during service interactions. Some of these requests largely deviate from service specifications and industry standards (e.g., asking the customer to pay an additional fee to return purchased goods) and can lead directly to service failures, whereas other requests are generally accepted by customers (e.g., asking customers not to smoke or shout in public areas). Many employee requests lie somewhere between these types. Specifically, employees may propose requests that are slightly outside the normal service scope yet are not unacceptable or detrimental to customers (e.g., asking customers to provide positive feedback and recommend their services or products to others) (Li et al. 2016, 2018). These requests are referred to as “employee fuzzy requests” and are generally motivated by employees’ desire to improve his/her work performance. However, the responses of customers to these requests are not always positive.

Employee fuzzy requests are widespread in service encounters (Li et al. 2018). In practice, these requests can be viewed as solutions to certain situations. For example, a waiter may request a customer to share a table with others in order to reduce the latter’s waiting time, thereby solving the problem of heavy customer flow. These requests may also be used to improve service capacity. For instance, a courier may request a customer to take an express delivery at a specific period, which is conducive to improving service efficiency (Kumar and Pansari 2016). In this sense, those customers who adapt to or comply with employee fuzzy requests contribute to the desired service outcomes, thereby benefiting both the employees and firms (Lin and Hsieh 2011). Given its high potential to influence service performance, the antecedents and mechanisms of such compliance must be examined, and the findings can offer valuable contributions to both the service literature and commercial practice.

Previous studies in relation to the factors that ensure customer compliance have focused on rational decision-making based on cost–benefit analysis (Dellande et al. 2004; Lin and Hsieh 2011; Kostopoulos et al. 2014). For example, following the rationality-based beliefs model, Li et al. (2018) proposed that customer compliance is driven by several factors, including expected technical quality and perceived reasonableness. However, in real service settings, customers may not receive material benefits from the outcomes of their compliance, especially in one-time transactions (Li et al. 2016). For example, those drivers who work for car-hailing services often request their customers to provide positive feedback, but customers will not receive any actual reward or benefit from complying with this request. As indicated in previous research, due to their personal attitudes and positive relationships with service providers, customers actively respond to the requests of firms and engage in the value co-creation process (Jaakkola and Alexander 2014). The customers’ motivation for compliance can be altruistic rather than egoistic, thereby suggesting that customers may voluntarily or autonomously comply with employees’ requests even without receiving any direct benefits (Osei-Frimpong 2017). As such, it is important and interesting to investigate the factors affecting customer compliance from the perspective of autonomy (or self-determination) (Lin and Hsieh 2011). Accordingly, this study investigates the variables and the underlying mechanism of customer compliance from the perspective of self-determination theory (SDT). We

build a comprehensive framework that integrates psychological need satisfaction and autonomous motivation to address the following questions: (1) how does customers' autonomous motivation affect their compliance and (2) how do the three types of basic need satisfaction influence customers' autonomous motivation? By addressing these questions, our study provides insights into customer compliance with employee fuzzy requests in a general service context. Our findings can offer valuable managerial insights for service providers.

The rest of this paper is structured as follows. Section 2 presents the literature review and establishes the self-determination mechanism. Section 3 proposes the hypotheses. Section 4 introduces the methodology. Section 5 presents the results. Section 6 presents the discussion, implications, and limitations. Section 7 concludes the paper.

2 Literature review

2.1 Customer compliance

Fuzzy requests are made by both customers and employees. Li et al. (2018) referred to employee fuzzy requests as techniques to increase work performance that are somewhat outside the normal service provision. By leveraging and integrating their own resources, customers' compliance with such requests improve the employees' service capacity and job achievements (Kasabov and Warlow 2010; Lin and Hsieh 2011). For example, customers are sometimes requested to give positive feedback with pertinent opinions or favorable comments, which help employees improve their work performance and gain the favor of other customers (Joo and Marakhimov 2018). In this sense, encouraging the formation of customer compliance facilitates the achievement of expected outcomes in service encounters.

In previous studies examining a variety of contexts, numerous factors affecting customer compliance have been proposed. For example, Albrecht and Hoogstraten (1998) found that the degree of customers' satisfaction with dentists determines their compliance with their dental treatment plans. Bowman et al. (2004) demonstrated that the customer product use compliance behavior in healthcare services is affected by the salience or mindfulness, costs and benefits of compliance, cues to action from marketing efforts, and perceived threats from non-compliance. Similarly, Taylor and Bower (2004) found that the perceived likelihood of a particular outcome affects the intention of customers to comply with product instructions. Although these studies yield insights into customer compliance in service encounters, only few studies have explored customer compliance with employee fuzzy requests. Following theory of planned behavior (TPB), Li et al. (2018) argued that when a customer encounters fuzzy requests from a delivery man (e.g., change the assigned time or location of the courier delivery), several factors, including expected technical quality, perceived reasonableness, perceived convenience, and inertia, can positively affect customer compliance. TPB posits that a customer responds to such requests by following a rational decision-making process that involves a cost–benefit analysis. However, in some service contexts, customers may comply with employees' requests even if

doing so does not provide them with material rewards or serve their personal interests (Li et al. 2016). This situation is common in one-time deals, such as car-hailing or takeaway services. For service providers, only relying on existing research, it will remain difficult to effectively predict customer compliance with employee fuzzy requests. Given the additional effort required, the customers' compliance with employees' fuzzy requests partly represents their voluntary support for employees or firms without considering what they receive in return (Rosenbaum and Massiah 2007; Verhoef et al. 2010). According to Osei-Frimpong (2017), those factors associated with customer commitment to compliance are self-determined, and autonomous motivation plays a crucial role. Therefore, studying the variables and mechanism of customer compliance from the SDT perspective is expected to produce valuable insights.

2.2 Self-determination theory

2.2.1 Autonomous motivation

SDT offers a robust framework to understand human nature, motivation, development, and wellness (Ryan and Deci 2000). This theory assumes that human beings are naturally inclined to pursue psychological well-being and individual development (Deci and Ryan 1985, 2012). When facing challenges or requests, people are assumed to integrate external experience with internal perception, being motivated to obtain different objectives (Standage et al. 2005). As an approach to focus on human motivation, SDT begins by differentiating types of motivation. This theory mainly examines how individuals' innate psychological need satisfaction promotes their self-determination and motivation integration and identifies the social and contextual factors that foster such process (Ryan and Deci 2000; Vallerand 2000; Gagné and Deci 2005). Many studies guided by SDT have examined those variables that impede or promote self-regulation, personal action, and well-being (e.g., Deci and Ryan 1985, Gagné and Deci 2005, and Osei-Frimpong 2017). The key finding of these studies is that individual behavior is driven by different types or qualities of motivation, which can be classified into autonomous and controlled motivations.

Autonomous motivation is observed among people who act due to their personal choices or intrinsic interests. By contrast, controlled motivation is observed among people who act due to external incentives or interpersonal constraints. Previous studies have indicated that autonomous motivation leads to stronger intention and more participation, while those people who experience controlled motivation tend to perform poorly and have low levels of participation (Hennig-Thurau and Paul 2007; Nie et al. 2015; Ryan et al. 2015). For example, Williams et al. (2002) demonstrated that autonomous motivation can predict a patient's ongoing adherence to the cessation of smoking, whereas controlled motivation cannot. Hagger and Chatzisarantis (2016) confirmed a significant relationship between autonomous motivation and future participation in extracurricular physical activities among students. In service encounters such as the use of car-hailing services, customers are in the position of being served and have more rights than employees; therefore, their

responses to employees' requests may be voluntary and self-determined. According to Osei-Frimpong (2017), customer commitment to compliance is influenced by autonomous regulation instead of controlled regulation. In addition, compared with firm-determined customers, self-determined ones participate in relational behaviors toward the firm and play important roles in marketing programs (Dholakia 2006). Therefore, autonomous motivation can be assumed to influence customers' compliance with employee fuzzy requests.

According to Ryan and Deci (2000), autonomous motivation comprises three types of regulations, namely, identified, integrated, and intrinsic regulations, which are ranked from low to high in a continuum according to the degree of self-determination. *Identified regulation* is observed among people engaging in an activity that is consistent with their goals; these people experience a sense of choice by recognizing the importance of their activity's outcomes (Hagger and Chatzisarantis 2016). When the action is perceived to be congruent with one's self-endorsed values and personal identity, the individual's motivation is described as *integrated regulation*. Given its close alignment with inherent consciousness, integrated regulation is more autonomous than identified regulation (Ryan and Deci 2000). As the most typical form of autonomous motivation, *intrinsic regulation* is synonymous with intrinsic motivation and posits that people's actions are motivated by their authentic sense of self via several factors, including pleasure and interest (Black and Deci 2000). In the research context, given that customers have no inherent tendency to seek enjoyment from employee fuzzy requests, their compliance with these requests is not driven by intrinsic motivation (Sheldon et al. 2003). Therefore, we exclude intrinsic regulation and assume that identified and integrated regulations are effective predictors of customer compliance with employees' fuzzy requests.

2.2.2 Need satisfaction

Another core principle of SDT is that humans have three basic needs, namely, (1) need for autonomy, (2) need for competence, and (3) need for relatedness. Satisfying these psychological needs promotes the formation and internalization of psychological regulation, thereby changing individual motivation. In service encounters, need satisfaction affects the customers' perceptions on services that they accept and their relationships with employees, thereby incorporating the employees' requests into their goals or values and changing the quality of their motivation. Accordingly, this study explores the effect of need satisfaction on customers to understand the development of identified and integrated regulations.

Specifically, the need satisfaction of autonomy shows that an individual can experience personal choice and free will, feeling that she/he can determine his/her own behavior (Black and Deci 2000). In the research context, such feeling mainly stems from the employees' support during service interactions (Williams et al. 2002). In this sense, perceived autonomy support represents the customers' need satisfaction of autonomy. In the research context, the need satisfaction of competence refers to the customers' belief that they are able to fulfill the requests of employees, and this definition is in line with Bandura's self-efficacy theory (Bandura 1977). Meanwhile, the need satisfaction of relatedness is defined as a sense of belonging with others or

the surrounding environment (Ryan and Deci 2000). In service settings, this need suggests that employees should establish a close relationship with their customers and provide them a sense of relatedness. Following the above analysis, we examine perceived autonomy support, self-efficacy, and sense of relatedness as influencing factors of identified and integrated regulations.

Inductively, the different types or qualities of motivations can predict behavioral outcomes (da Motta Veiga and Gabriel 2016). SDT differentiates autonomous motivation from controlled motivation according to the degree of self-determination in a continuum. Previous studies on autonomous versus controlled motivation have confirmed that the former leads to higher engagement and more effective action (Deci and Ryan 2008; da Motta Veiga and Gabriel 2016). Given its importance in facilitating motivation internalization (Gagné and Deci 2005), need satisfaction provides a means to understand how the environment affects autonomous motivation.

Consistent with the SDT model (Ryan and Deci 2000; Vallerand 2000), we establish our research framework to explore the influence of autonomous motivation on customer compliance with employees' fuzzy requests and introduce need satisfaction to clarify its importance on autonomous motivation. Figure 1 shows the self-determination mechanism that combines these two dimensions.

3 Hypotheses

3.1 Identified regulation

As a type of autonomous motivation, identified regulation occurs when individuals recognize that extrinsically set goals (situational requirements or requests from others) are aligned with their own objectives (Markland et al. 2005; Hagger and Chatzisarantis 2016). Guided by self-endorsed commitments rather than

Fig. 1 Research model

by feelings of pressure, this regulation of behavior is largely internalized (Ryan and Deci 2006). Motivated by such regulation, individuals tend to recognize the rationality of external requirements and thus take participatory actions for themselves (Osei-Frimpong 2017).

Marketing studies reveal that identified regulation is an important driver of customers' positive behavior. For example, Malhotra (2004) argued that customers' identified regulation can positively affect their relationships with their service providers, which may promote the development of customer extra-role behaviors (Dholakia 2006). Furthermore, identified regulation has been confirmed to positively influence customers' cooperation intention and participation behavior in service interactions (Lin et al. 2009; Osei-Frimpong 2017). Given that compliance is realized by overt acceptance and engagement (Bowman et al. 2004; Li et al. 2018), identified regulation may affect customer compliance. Specifically, through identified regulation, customers can understand employees' fuzzy requests and recognize their importance for themselves, thereby enhancing customers' intention to act and driving them to comply. Following this argument, we postulate the following:

H1 Identified regulation is positively related to customer compliance.

3.2 Integrated regulation

Integrated regulation is the most autonomous type of extrinsic motivation (Sheldon et al. 2003) that is observed when the external stimulus is consistent with individual values or identity (Ryan and Deci 2000; Gagné and Deci 2005). Although classified as extrinsic motivation because the action itself is not the individual's ultimate goal, integrated regulation has the same quality as intrinsic motivation. Therefore, integrated regulation is considered as a crucial driver of individual behavior (Olafsen et al. 2018).

Following White (2015) and Tseng et al. (2018), we define integrated regulation as customers' internalization of an external stimulus, thereby achieving consistency between the employees' fuzzy requests and their own values through comparison and matching processes. Meanwhile, the service encounters literature supports the idea that such regulation can influence customer engagement. For instance, Engström and Elg (2015) argued that integrated regulation significantly influences customer participation in service development. Specifically, such regulation represents the tendency of customers to allocate their resources (i.e., time and energy) into a process of value co-creation with the firm (Vargo 2008). When customers internalize the value co-creation requested by service providers as a need, they become willing to follow the employees' requests and engage in an interaction. Accordingly, integrated regulation may be conducive to customers' compliance with employee fuzzy requests. We therefore postulate the following:

H2 Integrated regulation is positively related to customer compliance.

3.3 Perceived autonomy support

Autonomy support is known as the external support of personal self-initiation, which typically takes the form of presenting rationales and options to engage in an activity (Williams et al. 2002), whereas perceived autonomy support refers to the feeling of being encouraged to take the initiative (Ryan and Deci 2000). In the research context, customer-perceived autonomy support is defined as the degree of freedom that customers feel in terms of their choice (i.e., comply or reject with a request) and effort (i.e., timely or delayed), thereby allowing them to experience an internal attribution in relation to their decision (Osei-Frimpong 2017).

Perceived autonomy support can contribute to identified regulation by highlighting the consistency between individual purposes and external requirements (Lim and Wang 2009; Nie et al. 2015). Specifically, perceived autonomy support can prompt individuals to find and understand the benefits of an action itself and identify the requests that suit their goals (Gagné 2003). This type of support can lead to the comparison of external purposes with personal purposes, and identified regulation occurs when these two purposes are aligned (Hennig-Thurau and Paul 2007). In service interactions, customers who are treated in an autonomy-supportive manner can recognize and derive the benefits by determining the inherent attractiveness of participation activities (McKee et al. 2006). Following these arguments, when customers face employees' fuzzy requests, perceived autonomy support can facilitate their affirmation of the congruence between the employees' goals and their own goals. Therefore, we postulate the following:

H3a Perceived autonomy support is positively related to identified regulation.

Perceived autonomy support also promotes integrated regulation because the feeling of freedom and choice can enhance individuals' sense of self, thereby motivating them to find consistency between their individual values and external tasks and pushing them to act for themselves (Ryan and Deci 2000; Gagné 2003). Ye and Kankanhalli (2018) found that users' perception of autonomy support for decision-making can increase one's motivation to design new mobile data service applications. With autonomy support, customers become willing to express their thoughts and integrate requests from service providers into their own values to achieve innovation outcomes for firms. Moreover, according to Williams et al. (2002), compared with customers in a controlled state, those who are in an autonomous state are more willing to integrate healthcare providers' advice emotionally and have a greater autonomous regulation for cessation of smoking. From this perspective, if customers are treated in an autonomy-supportive manner, then they become more likely to integrate the values associated with employee fuzzy requests into their own. Therefore, we propose the following:

H3b Perceived autonomy support is positively related to integrated regulation.

3.4 Self-efficacy

Self-efficacy refers to the individuals' evaluation of "how well one can execute courses of action required to deal with prospective situations" (Bandura 1977, 1982). We define customer self-efficacy as the customers' sense of competence to complete specific tasks proposed by the employee (Gist 1987). Previous studies show that self-efficacy is a cognitive factor that plays an important role in controlling personal motivation (Zhang and Lu 2002; Kang and Lee 2015).

Specifically, self-efficacy can facilitate identified regulation because the feeling of being competent can stimulate individuals' desire to interact with the environment, thereby driving them to match their personal goals with external goals (Ryan and Deci 2000; Engström and Elg 2015). When a person has adequate confidence before performing an action, she/he tends to identify the utility of the behavior itself. By contrast, when a person feels that she/he is inadequately competent, she/he may experience regulation limitations in motivation, which restrain him/her from undertaking the requested behavior (Teixeira et al. 2012). During the service process, customers can be influenced by their self-efficacy to attach importance to the acts of co-production with firms (Yim et al. 2012). When they feel capable or skilled to perform a role, they tend to identify the advantages of their actions and match them with their purposes (McKee et al. 2006). In this sense, customer self-efficacy can lead to the recognition and internalization of employee fuzzy requests. Therefore, we postulate the following:

H4a Self-efficacy is positively related to identified regulation.

Self-efficacy can also contribute to integrated regulation in service encounters by improving the customers' emotional reactions to requests and helping them engage in the requested roles (McKee et al. 2006). These customers' perceived ability or skill influences their attitudes and evaluations of tasks, thereby generating value judgments that go beyond the cost and benefit level (Yi and Gong 2008). These judgments affect their comparison of personal needs with external requirements and allow them to integrate the employees' requests into their own values. The more capable these individuals feel, the more motivationally integrated they become. Therefore, we postulate the following:

H4b Self-efficacy is positively related to identified regulation.

3.5 Sense of relatedness

Sense of relatedness refers to an individual's feeling of connection to others and the surrounding environment (Guay et al. 2017). We define customers' sense of relatedness as the feeling that one is valued and cared for in service interaction, and such feeling may influence the customer's service experience (Kim and Drumwright 2016).

Previous studies show that a feeling of connectedness promotes an identified regulation of positive activities (Guay et al. 2017). According to Pavey et al. (2011), sense of relatedness highlights the relationship between an individual's goals and those of other people. A person who perceives relatedness with others tend to pay additional attention to whether his/her personal purposes are consistent with those of others, which often results in a match between the two (Kaltcheva et al. 2013). In the same way, during the service process, the experience of belonging may offer psychological support to customers, thereby prompting them to affirm the consistency between their goals and the employees' requests. Therefore, we postulate the following:

H5a Sense of relatedness is positively related to identified regulation.

Kim and Drumwright (2016) demonstrated that those customers who experience more relatedness with service providers will have stronger autonomous motivation for subsequent engagement behaviors compared with those customers lacking a sense of relatedness. Fulfilling the customers' relatedness needs can contribute to their value integration and development of customer–employee relationship, thereby encouraging customers to align their own values with those of service providers (Romero 2018). In the research context, those consumers who feel close and connected with employees are likely to integrate the employees' fuzzy requests into their own values. Therefore, we postulate the following:

H5b Sense of relatedness is positively related to integrated regulation.

4 Methodology

4.1 Data collection

We chose the car-hailing service industry as our research context for three reasons. First, car hailing has become increasingly popular in China as a convenient way to travel. According to the China Internet Network Information Center (CNNIC) (2018), by the end of 2017, the number of car-hailing users in China had reached 287 million, an increase of 61.88 million from 2016, demonstrating a growth rate of 27.5%. Meanwhile, the proportion of individuals living in urban areas who were car-hailing service users reached 37.1%, an increase of 6.4 percentage points from 2016. Second, unlike employees of conventional taxi companies, drivers for car-hailing platforms are relatively independent from the companies they work for (Agatz et al. 2012). Specifically, car-hailing platforms cannot monitor the performance of their drivers in their service encounters at all times. Therefore, these drivers are free to propose fuzzy requests to their customers. Third, driver performance appraisal is not only related to the number of clients served and vehicle miles driven, but is also influenced by customer reviews in online evaluation systems, thus incentivizing

drivers to request customers to adapt their pick-up or drop-off locations or to give them high user ratings for efficiency and remuneration (Zhao and Dessouky 2008).

To identify a fuzzy request to investigate in this study, we conducted semi-structured interviews with 45 car-hailing users. The interviewees were informed about the definition of fuzzy requests (e.g., slightly outside the service benchmark and company policy) at the beginning of the interview and were asked to describe situations in which they received fuzzy requests from drivers. The most common fuzzy request received by these interviewees was providing favorable comments to their drivers. Therefore, we collected data from those users who have encountered such requests.

Given that passengers tend to comply with drivers' requests when they are unfamiliar with their route (Zhao and Dessouky 2008), we mainly used sample data from local car-hailing users in a city in southern China. We collected survey data at selected car-hailing stations and shopping malls with huge local crowds. A total of 15 well-trained marketing students were employed to conduct face-to-face surveys from July to September 2018. Before distributing the questionnaires, all respondents were asked the two preliminary questions, "have you purchased a car-hailing service in the last 3 months?" and "did the driver ask you to give a positive comment about his/her service?" A total of 523 respondents answered "yes" to both questions and proceeded to the full survey, for which they received a reward of 25 RMB. A total of 427 questionnaires were successfully returned. After excluding 45 incomplete questionnaires, a total of 382 complete responses were obtained for the data analysis, representing a 73.04% response rate. Table 1 presents the detailed sample characteristics of the respondents.

4.2 Measurement

All measures were assessed by using seven-point Likert-type scales, in which the possible responses to each item ranged from strongly disagree (1) to strongly agree (7). Customer-perceived autonomy support highlights the degree of freedom that customers feel in terms of the choice and effort when they encounter employees' fuzzy requests. To measure this variable, we used a four-item scale adapted from Ahearne et al. (2010). That study's original scale included five items and we deleted one adapted item (i.e., "The driver made it more efficient for me to give a favorable comment by keeping the procedure simple") in the pre-test phase for two reasons: (1) the factor loading of this item is below 0.5 (Hulland 1999; Hair et al. 2016) and (2) this item cannot reflect the customers' perceived autonomy support in our context because the procedure for customers to give favorable comments to drivers is fixed and is not under the control of drivers.

To measure self-efficacy, we adapted the five-item customer self-efficacy scale of McKee et al. (2006). Meanwhile, we measured sense of relatedness by using a three-item scale adapted from the relatedness scale of Furrer and Skinner (2003) and the need satisfaction scale of La Guardia et al. (2000), which was also used by Kim and Drumwright (2016) to measure customer social relatedness. We adapted items from Wilson et al. (2006) to measure identified and integrated regulations.

Table 1 Sample characteristics

Sample characteristics	Items	Frequency	Percentage
Gender	Male	221	57.85
	Female	161	42.15
Age	18 or below	10	2.62
	19–25	193	50.52
	26–35	161	42.15
	36–50	15	3.93
	51 or above	3	0.78
Education	College or below	17	4.45
	Bachelor	247	64.66
	Master or above	118	30.89
Profession	Student	191	50
	Worker	165	43.19
	Others	26	6.81
Revenue	1000 or below	70	18.33
	1001–3000	124	32.46
	3001–6000	74	19.37
	6001–10,000	39	10.21
	10,001 or above	75	19.63
Use frequency	Seldom	84	21.99
	Sometimes	198	51.83
	Often	95	24.87
	Always	5	1.31

N=382; others in terms of profession include freelancers and the unemployed

Specifically, our identified regulation scale contained three items, whereas our integrated regulation scale contained four items. We measured customer compliance following Colquitt (2001), who used three items to measure compliance. We modified these items to fit the service encounters context. “[Appendix A](#)” provides details of all these items.

We ensured the reliability and validity of each item in three steps. First, we invited a professional translator who was unfamiliar with our research to translate the English questionnaire to Chinese. Second, the Chinese questionnaire was translated back to English by another member of the research team. No semantic discrepancies were observed between the two English versions, thereby indicating the accuracy of translation. Third, the content validity of each item was evaluated by five academic experts in the service marketing field. These experts examined whether the questions were in line with the research context and whether their wording was easy to understand. The items were considered valid if four or more experts reached a consensus after an independent evaluation; otherwise, these items were discussed and revised by all five experts. This step improved the wording and enhanced the clarity and appropriateness of the questionnaire.

Lastly, the questionnaire was pre-tested among 100 users of car-hailing services, including 4 professors, 5 PhD students, 48 postgraduate students, and 43 undergraduate students. We examined the reliability and validity of these items by using the responses received in the pilot study. After deleting that inappropriate item of perceived autonomy support, all of our multiple-item constructs achieved high Cronbach's alpha values that exceeded the reliability threshold of 0.7, and all factor loadings were significant, thereby confirming the relevance of these items to the study variables.

5 Results

5.1 Measurement model assessment

The assessment of the measurement model comprised the examination of the model's reliability, convergent validity, and discriminant validity. Specifically, we used the software SmartPLS 3.2.8 to perform confirmatory factor analysis (CFA). Following the approach of Hair et al. (2016), reliability was tested using Cronbach's alpha, for which the value should exceed the threshold of 0.7 to indicate reliability. Convergent validity was verified by using the following three criteria: composite reliability (CR) should exceed 0.7, outer loading should exceed 0.7, and average variance extracted (AVE) should exceed 0.5. Table 2 shows that for all constructs, values of Cronbach's alpha, CR, and outer loading all exceed 0.7, and values of AVE exceed 0.5. Thus, all conditions for reliability and convergent validity were met. To examine discriminant validity, we compared the square roots of the AVE of the individual factors with the correlations between factors. Table 3 shows that all the square roots of the AVEs exceed the correlations between any pair of constructs, demonstrating adequate discriminant validity.

In addition, we used the software SPSS 20.0 to conduct Harman's single factor test to evaluate the possible presence of common method bias in our study. If one factor explains a large proportion (more than 40%) of the total item variance, then common method bias is assumed to be a serious concern. The largest proportion of total variance explained by a single factor was 28.59%, thereby suggesting that common method bias does not pose a threat in this study.

5.2 Structural model assessment

We performed partial least squares structural equation modeling (PLS-SEM) to analyze our data. PLS-SEM can provide additional robust estimations for models with a small sample size (Barroso et al. 2010). Given that SmartPLS is suitable for small quantities of data (Hair et al. 2016), we used SmartPLS 3.2.8 to test the hypothesis effect in our model. As shown in Fig. 2, our model included six control variables (gender, age, education, profession, revenue, and frequency of use of car-hailing services), none of which showed a significant effect on customer compliance.

Table 2 Reliability and construct validity

Construct name	Items	Cronbach's α	CR	Loadings	AVE
Perceived autonomy support	PAS1	0.837	0.888	0.832	0.665
	PAS2			0.713	
	PAS3			0.888	
	PAS4			0.820	
Self-efficacy	SEF1	0.893	0.886	0.848	0.609
	SEF2			0.732	
	SEF3			0.737	
	SEF4			0.768	
	SEF5			0.811	
Sense of relatedness	SRE1	0.829	0.899	0.740	0.749
	SRE2			0.925	
	SRE3			0.918	
Identified regulation	IDR1	0.829	0.897	0.837	0.745
	IDR2			0.912	
	IDR3			0.839	
Integrated regulation	INR1	0.859	0.904	0.803	0.703
	INR2			0.775	
	INR3			0.893	
	INR4			0.877	
Customer compliance	CCO1	0.781	0.872	0.855	0.695
	CCO2			0.822	
	CCO3			0.823	

CR composite reliability, AVE average variance extracted

Table 3 Discriminant validity

Construct	Mean	S.D	AVE	PAS	SEF	SRE	IDR	INR	CCO
PAS	4.785	1.395	0.665	0.815					
SEF	5.867	1.112	0.609	0.328**	0.780				
SRE	4.920	1.069	0.749	0.373**	0.408**	0.865			
IDR	3.428	1.489	0.745	0.156**	0.181*	0.293**	0.863		
INR	3.884	1.434	0.703	0.270**	0.286**	0.390**	0.558**	0.838	
CCO	5.202	1.383	0.695	0.165**	0.241**	0.345**	0.292**	0.313**	0.834

Diagonal elements are the square root of AVE; Off-diagonal elements are the correlations among constructs

PAS perceived autonomy support, SEF self-efficacy, SRE sense of relatedness, IDR identified regulation, INR integrated regulation, CCO customer compliance

* $p < 0.05$; ** $p < 0.01$

Fig. 2 Results of the structural model

Table 4 Hypothesis testing

Path	Hypothesis	Path coefficients	<i>t</i> values	Significant level
IDR → CCO	H1	0.165	2.721	**
INR → CCO	H2	0.225	3.303	***
PAS → IDR	H3a	0.041	0.697	n.s.
PAS → INR	H3b	0.118	2.193	*
SEF → IDR	H4a	0.065	0.938	n.s.
SEF → INR	H4b	0.128	2.101	*
SRE → IDR	H5a	0.252	4.305	***
SRE → INR	H5b	0.294	5.007	***

PAS perceived autonomy support, SEF self-efficacy, SRE sense of relatedness, IDR identified regulation, INR integrated regulation, CCO customer compliance, n.s. not significant

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

As shown in Table 4, the positive effect of identified regulation on customer compliance predicted by H1 was supported ($\beta = 0.165$, $t = 2.721$). Integrated regulation also showed a positive influence on customer compliance ($\beta = 0.225$, $t = 3.303$), thereby supporting H2. H3b was supported ($\beta = 0.118$, $t = 2.193$), whereas H3a was rejected ($\beta = 0.041$, $t = 0.697$), thereby suggesting that perceived autonomy support had a positive effect on integrated regulation, but had no significant influence on identified regulation. Similarly, self-efficacy showed a positive relationship with integrated regulation ($\beta = 0.128$, $t = 2.101$), but had no significant effect on identified regulation ($\beta = 0.065$, $t = 0.938$), thereby supporting H4b and rejecting H4a. In other words, perceived autonomy support and self-efficacy tend to promote integrated regulation in the context of employee fuzzy requests. Confirming both H5a and H5b, sense of relatedness showed significant positive effects on both identified regulation ($\beta = 0.252$, $t = 4.305$) and integrated regulation ($\beta = 0.294$, $t = 5.007$), thereby

highlighting the importance of sense of relatedness in driving customer autonomous motivation (Kim and Drumwright 2016).

5.3 Mediating effect testing

We used SmartPLS 3.2.8 to examine the mediating effects of identified and integrated regulations on the relationships between the three types of need satisfaction and customer compliance. Our mediation test followed the approach of Baron and Kenny (1986), the following conditions were examined in turn: (1) the independent variable (IV) should predict the dependent variable (DV); (2) IV should predict the mediating variable (MV); and (3) when introduced to the relationship between IV and DV, MV should predict DV and the relationship between IV and DV tends to diminish. When all these conditions are satisfied, MV has a partial (full) mediating effect if IV has a significant (insignificant) effect on DV in condition (3).

Table 5 (lines 1 and 4) shows that customer compliance is not significantly predicted by perceived autonomy support ($\beta=0.034$, $t=0.684$), which suggests that this variable does not satisfy the condition (1) and that conditions (2) and (3) need not be examined. In other words, no mediation effect is observed on the relationship between perceived autonomy support and customer compliance.

To test whether identified and integrated regulations mediate the relationship between self-efficacy and customer compliance, we checked the following conditions (lines 2 and 5 in Table 5): (1) self-efficacy significantly predicts customer compliance ($\beta=0.153$, $t=2.742$); (2) self-efficacy significantly predicts integrated regulation ($\beta=0.128$, $t=2.101$); and (3) when introduced, integrated regulation significantly predicts customer compliance ($\beta=0.127$, $t=2.082$), and the value of the coefficient between self-efficacy and customer compliance decreases yet remains significant ($\beta=0.150$, $t=2.433$). This finding suggests that integrated regulation partially mediates the relationship between self-efficacy and customer compliance.

Table 5 Mediation examination results

IV	MV	DV	IV $\rightarrow$ DV	IV $\rightarrow$ MV	IV + MV $\rightarrow$ DV		Mediating results	Indirect effect
					IV $\rightarrow$ DV	MV $\rightarrow$ DV		
PAS	IDR	CCO	0.034 ^{n.s.}	0.041 ^{n.s.}	0.005 ^{n.s.}	0.138*	–	–
SEF	IDR	CCO	0.153**	0.065 ^{n.s.}	0.150*	0.138*	–	–
SRE	IDR	CCO	0.309***	0.252***	0.232***	0.138*	Partial	0.035*
PAS	INR	CCO	0.034 ^{n.s.}	0.118*	0.005 ^{n.s.}	0.127*	–	–
SEF	INR	CCO	0.153**	0.128*	0.150*	0.127*	Partial	0.016*
SRE	INR	CCO	0.309***	0.294***	0.232***	0.127*	Partial	0.037*

The significance of the indirect effect was determined by the bootstrap percentile p value which was obtained from PLS bootstrap re-sampling analysis proposed by Chin (2010)

IV independent variable, MV mediating variable, DV dependent variable, PAS perceived autonomy support, SEF self-efficacy, SRE sense of relatedness, IDR identified regulation, INR integrated regulation, CCO customer compliance, n.s., not significant

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

However, identified regulation is not significantly predicted by self-efficacy ($\beta=0.065$, $t=0.938$), thereby not satisfying condition (2). In other words, identified regulation has no mediating effect on the relationship between self-efficacy and customer compliance.

Following the same procedure, we checked the results presented in lines 3 and 6 in Table 5. As expected, the following conditions for identified and integrated regulations were satisfied: (1) sense of relatedness significantly predicts customer compliance ($\beta=0.309$, $t=5.849$); (2) both identified and integrated regulations are significantly predicted by sense of relatedness ($\beta=0.252$, $t=4.305$; $\beta=0.294$, $t=5.849$); and (3) after their introduction, identified and integrated regulations significantly predict customer compliance ($\beta=0.138$, $t=2.485$; $\beta=0.127$, $t=2.082$), and the value of the coefficient between sense of relatedness and customer compliance decreases yet remains significant. Therefore, identified and integrated regulations partially mediate the relationship between sense of relatedness and customer compliance.

6 Discussion and implication

6.1 Contributions to theory

Drawing on SDT, this study sheds light on the relationships among need satisfaction, autonomous motivation, and customer compliance, contributing to the understanding of customer compliance by modeling important variables.

First, our results confirm the positive effects of identified and integrated regulations on customer compliance. These findings support the view of previous research that argues that customer participatory behavior and commitment to compliance are largely driven by autonomous regulation (Hagger and Chatzisarantis 2016; Osei-Frimpong 2017). Specifically, when customers understand the aims of employee fuzzy requests and feel that these requests are important to themselves, they tend to comply with these requests in order to achieve their expected outcomes. In addition, when customers internalize these requests as representations of their identities and values, they tend to follow the employees for self-realization, which is largely driven by the self (Olafsen et al. 2018).

Second, as indicated by Griffin (2016), our results show that perceived autonomy support contributes to integrated regulation. However, our findings do not support the hypothesized relationship between perceived autonomy support and identified regulation. According to SDT, the need satisfaction of autonomy is accompanied by an internal perceived locus of causality (IPLC) which highlights self, affecting individual psychological engagement in interpersonal interactions especially when performing altruistic behaviors (Deci and Ryan 1985; Gagné 2003). In our research context, as the party being served, customers also consider the autonomy support from employees as part of the service (Hartline et al. 2000). Therefore, when customers encounter employees' fuzzy requests that do not directly benefit them, their perceived autonomy support promotes them to prioritize their own goals according to IPLC (Steinberg and Silverberg 1986; Ryan et al. 2015). While integrated

regulation is based on the conscious perception of values and identity that the behavior represents rather than on the benefits of the behavior, perceived autonomy support emphasizes that initiative can make customers see the action as part of their self-definition, positively influencing their integrated regulation (Ryan et al. 2015).

Third, self-efficacy has a positive effect on integrated regulation because the feeling of being competent reduces the conflict and tension between the requested action and the customer's sense of self, thereby facilitating a voluntary search for consistency between the fuzzy request and their own values (Ryan and Deci 2000). This finding is in line with the results of previous studies that show that self-efficacy can effectively promote positive customer responses in service encounters (McKee et al. 2006). However, the effect of self-efficacy on identified regulation is not significant, and this finding may be explained by the nature of the context. Specifically, unlike previous studies that focus on education or sport, both of which depend on one's personal effort, in service marketing, both self-efficacy and other-efficacy can affect customer psychological regulation (Lent and Lopez 2002). As the party being served, customers usually expect high levels of employee efficacy to help them identify the consistency between the goals of employees and those of their own (Yim et al. 2012). The presence of this additional requirement may explain why this relationship is not supported.

Fourth, in line with previous studies (Baumeister and Leary 1995; Ryan and Deci 2000), sense of relatedness positively affects both identified and integrated regulations. In other words, customers' responses to employees can be affected by emotional connections or interpersonal relationships (Kaltcheva et al. 2013; Kim and Drumwright 2016). Specifically, the feeling of relatedness can reduce the sense of distance between customers and employees, thereby making the former pay more attention to employee requests and find an association with the employees instead of simply ignoring their requests. Furthermore, according to Lin and Hsieh (2011), the personal contact between the customer and employee plays a key role in the customer's internalization of the firm's values. During service interactions, the customers' experiences of relatedness are vital to their autonomous motivation.

This study offers three major theoretical contributions. First, unlike previous compliance studies that have focused on the rational decision-thinking process (Li et al. 2018), this study is the first to use SDT to develop a self-determination mechanism for customer compliance with employee fuzzy requests by emphasizing the influence of autonomous motivation, thereby providing valuable insights into customer compliance in service encounters.

Second, with regard to motivation type, although previous studies have examined the effects of both controlled and autonomous motivations on customer behavior (Williams et al. 1998; Osei-Frimpong 2017), only few studies have investigated the effects of different types of autonomous motivations during service interactions. Our findings confirm that both identified and integrated regulations can promote customer compliance, thereby lending empirical support to the viewpoint that highly internalized extrinsic motivations prompt individuals to enact the requested behaviors by enhancing their self-determination (Ryan and Deci 2000; Sheldon et al. 2003). In this sense, our study deepens the present understanding of motivations in SDT.

Third, this study contributes to the SDT literature by applying this theory to the service marketing field. Our findings highlight the effects of perceived autonomy support, self-efficacy, and sense of relatedness on autonomous regulations and underscore the important role of need satisfaction in service encounters. By providing an avenue for comprehensively understanding the factors that influence customer behavior, our study expands the application of SDT, which has previously focused on certain fields, such as healthcare, education, sports, and organizational behavior (Williams et al. 1998; Lin et al. 2009; Osei-Frimpong 2017).

6.2 Implication for practice

Our research empirically examines the effects of need satisfaction and autonomous motivation on customer compliance and highlights the need for service providers or employees (e.g., car-hailing drivers) to understand the psychological needs and motivations of their customers during service encounters. This knowledge is essential because customer self-determination can motivate customers to comply with the employees' fuzzy requests and participate in relational actions, which benefit the employees and firms.

Specifically, employees should value their customers' perceptions of autonomy, competence, and relatedness as they influence these customers' motivation to comply with their fuzzy requests. In other words, employees should adopt certain communication approaches to provide their customers with choices and allow them to decide freely whether and how to comply with their requests. With regard to self-efficacy, employees should propose fuzzy requests that customers can comply with easily; otherwise, these customers may reject such requests because they feel incompetent. Furthermore, given that sense of relatedness positively affects both identified and integrated regulations, a respectful and friendly environment should be established, and employees should use their interpersonal skills to establish favorable relationships with their customers during the service process.

Managers should also train their employees to adopt a customer-centric approach and improve the emotional well-being of their customers during service encounters. Our findings also highlight the effects of autonomous regulations on customer compliance. Given that both identified and integrated regulations entail the internalization of external information, managers must promote their customers' understanding of fuzzy requests. In this sense, different forms of information or advertisements that highlight the purposes and values of employee fuzzy requests may be useful.

6.3 Limitation and future work

Despite its valuable implications, our study has several limitations. First, in the continuum of motivation proposed by SDT, other regulations belonging to the category of controlled motivation may influence customer compliance. Future studies can extend the scope of our study by exploring the effects of external and introjected regulations. Second, we ignore other factors (e.g., culture and ethics) that may affect the consumers' responses to employee fuzzy requests. For example, in China where

people pay attention to interpersonal relationships, customers may be inclined to comply with employee fuzzy requests. By contrast, in western cultures where individualism dominates, consumers are not likely to comply with such requests. This possibility clearly merits further research. Third, although employee fuzzy requests are common in many service scenarios, we only investigate customer compliance by using a sample of car-hailing users. Other types of service encounters should be investigated given that the results may vary across different service settings. Finally, although common method bias does not pose a problem in our cross-sectional study, a longitudinal study should be conducted to verify the self-determination mechanism.

7 Conclusion

From the SDT perspective, this research empirically examines the important variables and underlying mechanism of customer compliance with employee fuzzy requests. Our findings reveal that identified and integrated regulations significantly affect customer compliance. By identifying three types of need satisfaction, we find that identified regulation is positively influenced by sense of relatedness, whereas integrated regulation is affected by perceived autonomy support, self-efficacy, and sense of relatedness. Consequently, the self-determination mechanism is established to explain the driver of customer compliance in a general service setting and to provide important implications for both scholars and managers.

Funding The work was substantially supported by National Natural Science Foundation of China (No. 71701002), The Ministry of Education of China, Humanities and Social Sciences Project (No. 17YJC630068), Anhui Province Soft Science Project (No. 1607a0202004), and Anhui Higher Education Promotion Plan on Natural Science (No. TSKJ2017B03).

Open Access This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>.

Appendix A: Measurement items for study

Measure items

Perceived autonomy support

PAS1	The car-hailing driver allowed me to make a choice whether or not to give favorable comment
------	---

Measure items	
PAS2	The car-hailing driver did not urge me to give favorable comment quickly
PAS3	The car-hailing driver allowed me to give favorable comment in my way
PAS4	The car-hailing driver allowed me to determine what needs to be written
Self-efficacy	
SEF1	I was good at evaluating the performance of the car-hailing driver
SEF2	I knew how to enter the comment interface
SEF3	I knew how to operate the comment interface
SEF4	I knew how to give the car-hailing driver favorable comment
SEF5	I felt comfortable to give the car-hailing driver favorable comment
Sense of relatedness	
SRE1	I felt valued
SRE2	I felt cared for
SRE3	I felt a lot of closeness
Identified regulation	
IDR1	I valued the benefits of giving the car-hailing driver favorable comment
IDR2	It was important for me to give the car-hailing driver favorable comment
IDR3	I felt uncomfortable if I did not give the car-hailing driver favorable comment
Integrated regulation	
INR1	I considered giving the car-hailing driver favorable comment to be part of my identity
INR2	I considered giving the car-hailing driver favorable comment a part of my life
INR3	I considered giving the car-hailing driver favorable comment consistent with my values
INR4	I considered giving the car-hailing driver favorable comment consistent with my social goals
Customer compliance	
CCO1	I followed the driver's instruction to give the car-hailing driver favorable comment
CCO2	I promptly gave the car-hailing driver favorable comment
CCO3	I tried to give the car-hailing driver favorable comment

References

- Agatz N, Erera A, Savelsbergh M, Wang X (2012) Optimization for dynamic ride-sharing: a review. *Eur J Oper Res* 223(2):295–303
- Ahearne M, MacKenzie SB, Podsakoff PM, Mathieu JE, Lam SK (2010) The role of consensus in sales team performance. *J Mark Res* 47(3):458–469
- Albrecht G, Hoogstraten J (1998) Satisfaction as a determinant of compliance. *Community Dent Oral Epidemiol* 26(2):139–146
- Bandura A (1977) Self-efficacy: toward a unifying theory of behavioral change. *Psychol Rev* 84(2):191–215
- Bandura A (1982) Self-efficacy mechanism in human agency. *Am Psychol* 37(2):122–147

- Baron RM, Kenny DA (1986) The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and conceptual considerations. *J Pers Soc Psychol* 51(6):1173–1182
- Barroso C, Carrión GC, Roldán JL (2010) Applying maximum likelihood and PLS on different sample sizes: studies on SERVQUAL model and employee behavior model. In: Esposito Vinzi V, Chin WW, Henseler J, Wang H (eds) *Handbook of partial least squares*. Springer, New York, pp 427–447
- Bateson JG (1985) Perceived control and the service encounter. In: Czepiel JA, Solomon MR, Surprenant CF (eds) *The service encounter: managing employee/customer interaction in service businesses*. Lexington Books, Lexington, pp 67–82
- Baumeister RF, Leary MR (1995) The need to belong: desire for interpersonal attachments as a fundamental human motivation. *Psychol Bull* 117:497–529
- Beatty SE, Ogilvie J, Northington WM, Harrison MP, Holloway BB, Wang S (2016) Frontline service employee compliance with customer special requests. *J Serv Res* 19(2):158–173
- Black AE, Deci EL (2000) The effects of instructors' autonomy support and students' autonomous motivation on learning organic chemistry: a self-determination theory perspective. *Sci Educ* 84(6):740–756
- Bowman D, Heilman CM, Seetharaman P (2004) Determinants of product-use compliance behavior. *J Mark Res* 41(3):324–338
- Chin WW (2010) Bootstrap cross-validation indices for PLS path model assessment. In: Vinzi VE, Chin WW, Henseler J, Wang H (eds) *Handbook of partial least square concepts, methods and application*. Springer, Heidelberg, pp 83–97
- China Internet Network Information Center (2018) More than 60 million new users, the ride-sharing market prospects are promising and new competitors enter the game. https://www.cnnic.cn/hlwfyj/fxszl/fxswz/201801/t20180131_70210.htm. Accessed 31 Jan 2018
- Colquitt JA (2001) On the dimensionality of organizational justice: a construct validation of a measure. *J Appl Psychol* 86(3):386–400
- Da Motta Veiga SP, Gabriel AS (2016) The role of self-determined motivation in job search: a dynamic approach. *J Appl Psychol* 101(3):350–361
- Deci EL, Ryan RM (1985) *Intrinsic motivation and self-determination in human behavior*. Springer, New York
- Deci EL, Ryan RM (2008) Self-determination theory: a macrotheory of human motivation, development, and health. *Can Psychol* 49(3):182–185
- Deci EL, Ryan RM (2012) Motivation, personality, and development within embedded social contexts: an overview of self-determination theory. *The Oxford handbook of human motivation*. Oxford University Press, Oxford, pp 85–107
- Dellande S, Gilly MC, Graham JL (2004) Gaining compliance and losing weight: the role of the service provider in health care services. *J Mark* 68(3):78–91
- Dholakia UM (2006) How customer self-determination influences relational marketing outcomes: evidence from longitudinal field studies. *J Mark Res* 43(1):109–120
- Engström J, Elg M (2015) A self-determination theory perspective on customer participation in service development. *J Serv Mark* 29(6):511–521
- Ferreira JJ, Marques CS, Azevedo C (2011) Competitiveness, resources, and capabilities: empirical evidence from retail banking. *Serv Bus* 5(4):313–337
- Furrer C, Skinner E (2003) Sense of relatedness as a factor in children's academic engagement and performance. *J Educ Psychol* 95(1):148–162
- Gagné M (2003) The role of autonomy support and autonomy orientation in prosocial behavior engagement. *Motiv Emot* 27(3):199–223
- Gagné M, Deci EL (2005) Self-determination theory and work motivation. *J Organ Behav* 26(4):331–362
- Gist ME (1987) Self-efficacy: Implications for organizational behavior and human resource management. *Acad Manage Rev* 12(3):472–485
- Griffin BW (2016) Perceived autonomy support, intrinsic motivation, and student ratings of instruction. *Stud Educ Eval* 51:116–125
- Guay F, Denault A-S, Renaud S (2017) School attachment and relatedness with parents, friends and teachers as predictors of students' intrinsic and identified regulation. *Contemp Educ Psychol* 51:416–428
- Hagger MS, Chatzisarantis NL (2016) The trans-contextual model of autonomous motivation in education: conceptual and empirical issues and meta-analysis. *Rev Educ Res* 86(2):360–407
- Hair JF Jr, Hult GTM, Ringle C, Sarstedt M (2016) *A primer on partial least squares structural equation modeling (PLS-SEM)*. Sage Publications, Thousand Oaks

- Hartline MD, Maxham JG III, McKee DO (2000) Corridors of influence in the dissemination of customer-oriented strategy to customer contact service employees. *J Mark* 64(2):35–50
- Hennig-Thurau T, Paul M (2007) Can economic bonus programs jeopardize service relationships? *Serv Bus* 1(2):159–175
- Hulland J (1999) Use of partial least squares (PLS) in strategic management research: a review of four recent studies. *Strateg Manage J* 20(2):195–204
- Jaakkola E, Alexander M (2014) The role of customer engagement behavior in value co-creation: a service system perspective. *J Serv Res* 17(3):247–261
- Joo J, Marakhimov A (2018) Antecedents of customer participation in business ecosystems: evidence of customers' psychological ownership in facebook. *Serv Bus* 12(1):1–23
- Kaltcheva VD, Winsor RD, Parasuraman A (2013) Do customer relationships mitigate or amplify failure responses? *J Bus Res* 66(4):525–532
- Kang YJ, Lee WJ (2015) Self-customization of online service environments by users and its effect on their continuance intention. *Serv Bus* 9(2):321–342
- Kasabov E, Warlow AJ (2010) Towards a new model of “customer compliance” service provision. *Eur J Market* 44(6):700–729
- Kim E, Drumwright M (2016) Engaging consumers and building relationships in social media: how social relatedness influences intrinsic vs. extrinsic consumer motivation. *Comput Hum Behav* 63(3):970–979
- Kostopoulos G, Gounaris S, Rizomyliotis I (2014) How to reduce the negative impact of customer non-compliance: an empirical study. *J Strateg Mark* 22(6):513–529
- Kumar V, Pansari A (2016) Competitive advantage through engagement. *J Mark Res* 53(4):497–514
- La Guardia JG, Ryan RM, Couchman CE, Deci EL (2000) Within-person variation in security of attachment: a self-determination theory perspective on attachment, need fulfillment, and well-being. *J Pers Soc Psychol* 79(3):367–384
- Lent RW, Lopez FG (2002) Cognitive ties that bind: a tripartite view of efficacy beliefs in growth-promoting relationships. *J Soc Clin Psychol* 21(3):256–286
- Li X, Guo X, Wang C, Zhang S (2016) Do buyers express their true assessment? Antecedents and consequences of customer praise feedback behavior on taobao. *Internet Res* 26(5):1112–1133
- Li X, Zhang S, Wang C, Guo X (2018) Understanding customers' compliance behavior to frontline employees' fuzzy requests. *J Serv Mark* 32(2):235–246
- Lim BC, Wang CJ (2009) Perceived autonomy support, behavioural regulations in physical education and physical activity intention. *Psychol Sport Exerc* 10(1):52–60
- Lin J-SC, Hsieh C-C (2011) Modeling service friendship and customer compliance in high-contact service relationships. *J Serv Manage* 22(5):607–631
- Lin C-P, Tsai YH, Chiu C-K (2009) Modeling customer loyalty from an integrative perspective of self-determination theory and expectation–confirmation theory. *J Bus Psychol* 24(3):315–326
- Malhotra Y (2004) Desperately seeking self-determination: key to the new enterprise logic of customer relationships. *AMCIS*, pp 1–8
- Markland D, Ryan RM, Tobin VJ, Rollnick S (2005) Motivational interviewing and self-determination theory. *J Soc Clin Psychol* 24(6):811–831
- McKee D, Simmers CS, Licata J (2006) Customer self-efficacy and response to service. *J Serv Res* 8(3):207–220
- Nasurdin AM, Ahmad NH, Tan CL (2015) Cultivating service-oriented citizenship behavior among hotel employees: the instrumental roles of training and compensation. *Serv Bus* 9(2):343–360
- Nie Y, Chua BL, Yeung AS, Ryan RM, Chan WY (2015) The importance of autonomy support and the mediating role of work motivation for well-being: testing self-determination theory in a Chinese work organisation. *Int J Psychol* 50(4):245–255
- Olafsen AH, Deci EL, Halvari H (2018) Basic psychological needs and work motivation: a longitudinal test of directionality. *Motiv Emot* 42(2):178–189
- Osei-Frimpong K (2017) Patient participatory behaviors in healthcare service delivery: self-determination theory (SDT) perspective. *J Serv Theory Pract* 27(2):453–474
- Pavey L, Greitemeyer T, Sparks P (2011) Highlighting relatedness promotes prosocial motives and behavior. *Pers Soc Psychol Bull* 37(7):905–917
- Romero J (2018) Exploring customer engagement in tourism: construct proposal and antecedents. *J Vacat Mark* 24(4):293–306
- Rosenbaum MS, Massiah CA (2007) When customers receive support from other customers: exploring the influence of intercustomer social support on customer voluntary performance. *J Serv Res* 9(3):257–270

- Ryan RM, Deci EL (2000) Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *Am Psychol* 55(1):68–78
- Ryan RM, Deci EL (2006) Self-regulation and the problem of human autonomy: does psychology need choice, self-determination, and will? *J Pers* 74(6):1557–1586
- Ryan RM, Deci EL, Grolnick WS, La Guardia JG (2015) The significance of autonomy and autonomy support in psychological development and psychopathology. In: Cicchetti D, Cohen DJ (eds) *Developmental psychopathology*, 1st edn. Wiley, New York, pp 795–849
- Sheldon KM, Turban DB, Brown KG, Barrick MR, Judge TA (2003) Applying self-determination theory to organizational research. *Research in personnel and human resource management*, vol 22. Elsevier Science, New York, pp 357–431
- Standage M, Duda JL, Ntoumanis N (2005) A test of self-determination theory in school physical education. *Br J Educ Psychol* 75(3):411–433
- Steinberg L, Silverberg SB (1986) The vicissitudes of autonomy in early adolescence. *Child Dev* 57:841–851
- Taylor VA, Bower AB (2004) Improving product instruction compliance: “If you tell me why, I might comply”. *Psychol Mark* 21(3):229–245
- Teixeira PJ, Carraça EV, Markland D, Silva MN, Ryan RM (2012) Exercise, physical activity, and self-determination theory: a systematic review. *Int J Behav Nutr Phys Act* 9(1):78–108
- Tseng FC, Pham TTL, Cheng TCE, Teng CI (2018) Enhancing customer loyalty to mobile instant messaging: perspectives of network effect and self-determination theories. *Telemat Inform* 35(5):1133–1143
- Vallerand RJ (2000) Deci and Ryan’s self-determination theory: a view from the hierarchical model of intrinsic and extrinsic motivation. *Psychol Inq* 11(4):312–318
- Vargo SL (2008) Customer integration and value creation: paradigmatic traps and perspectives. *J Serv Res* 11(2):211–215
- Verhoef PC, Reinartz WJ, Krafft M (2010) Customer engagement as a new perspective in customer management. *J Serv Res* 13(3):247–252
- Wang S, Beatty SE, Liu J (2012) Employees’ decision making in the face of customers’ fuzzy return requests. *J Mark* 76(6):69–86
- White C (2015) The impact of motivation on customer satisfaction formation: a self-determination perspective. *Eur J Market* 49(11):1923–1940
- Williams GC, Rodin GC, Ryan RM, Grolnick WS, Deci EL (1998) Autonomous regulation and long-term medication adherence in adult outpatients. *Health Psychol* 17(3):269–276
- Williams GG, Gagné M, Ryan RM, Deci EL (2002) Facilitating autonomous motivation for smoking cessation. *Health Psychol* 21(1):40–50
- Wilson PM, Rodgers WM, Loitz CC, Scime G (2006) “It’s Who I Am... Really!” The importance of integrated regulation in exercise contexts 1. *J Appl Biobehav Res* 11(2):79–104
- Ye H, Kankanhalli A (2018) User service innovation on mobile phone platforms: investigating impacts of lead useriness, toolkit support, and design autonomy. *MIS Q* 42(1):165–187
- Yi Y, Gong T (2008) The electronic service quality model: the moderating effect of customer self-efficacy. *Psychol Mark* 25(7):587–601
- Yim CK, Chan KW, Lam SS (2012) Do customers and employees enjoy service participation? Synergistic effects of self-and-other-efficacy. *J Mark* 76(6):121–140
- Zhang AQ, Lu Q (2002) The regulation of self-efficacy and attributional feedback on motivation. *Soc Behav Pers* 30(3):281–287
- Zhao J, Dessouky M (2008) Service capacity design problems for mobility allowance shuttle transit systems. *Transp Res Pt B-Methodol* 42(2):135–146

Publisher’s Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.