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Exploring The Interrelationship and Roles of Employee–Organization Relationship Outcomes Between Symmetrical Internal Communication and Employee Job Engagement

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Abstract

Purpose
This paper aims to investigate how employee–organization relationship (EOR) outcomes – types and qualities – are interrelated and how employees' perceptions of types (exchange and communal EORs) and qualities (trust, satisfaction, commitment, and control mutuality) play a role in their evaluations of symmetrical internal communication (SIC) and employee job engagement (EJE).

Design/methodology/approach
This study conducted an online survey of full-time employees (N = 804) from major US industries. This study performed a confirmatory factor analysis to check the validity and reliability of the measurement model using latent variables and then conducted structural equation modeling.

Findings
The findings demonstrate that employees' perceptions of both exchange and communal EORs are associated with each of the four EOR qualities. The results also show that only communal EORs have a significant relationship with perceived SIC and that employees' perceptions about one of the EOR quality indicator, satisfaction with an organization, has a significant association with their perceived EJE.

Originality/value
This study contributes to relationship management theory within the internal context by examining the interrelationship between each of the EOR types and qualities that are perceived by employees. This paper also suggests the practical importance of developing not only communal but also exchange EORs to enhance EOR quality. Additionally, the results imply that SIC programs could help to enhance employees' perceptions of communal EORs and employees could be engaged in their workplace when they are satisfied with their organizations.

Keywords
Employee perceptions. Relationship types, Relationship qualities, Symmetrical internal communication, Employee job engagement

To demonstrate employee–organization relationship (EOR) outcomes, public relations scholars use two different relationship outcome concepts: type and quality. The EOR types perceived by employees refer to the distinct categories in which an individual employee perceives and defines the essential nature of their relationship with their organization. The EOR quality perceived by employees can be defined as an individual employee's evaluation of the perceptual state of interdependence between and interactions with their organization. To examine the effects of internal communication programs on relationships with employees and the attitudinal and behavioral consequences of relationship quality, many EOR studies have adopted all or some of Hon and Grunig's (1999) six indicators of OPR outcomes that include subconstructs of relationship types – i.e. exchange and communal
relationships – and quality – i.e. trust, satisfaction, commitment, and control mutuality (e.g. Kang and Sung, 2017, 2019; Kim and Rhee, 2011; Men, 2014, 2015; Yue et al., 2019).

Scholars have begun to discuss relationship types as a distinct and separate concept from relationship qualities by applying two different type measures, instead of the four relationship quality indicators, to show how relationship types are different according to relationship outcomes (e.g. Kim and Sung, 2016; Li et al., 2020) or how they might function as antecedents to relationship quality (e.g. Lee and Kim, 2020). Recent attempts to distinguish the two relationship qualities and types suggest the need for a thorough examination of the relationships between these two concepts in a specific relational context. However, clear rationale and empirical evidence supporting the associations of types and qualities in the internal context need to be further investigated in the organizational relationship management literature (Lee and Kim, 2020).

To better understand the interrelationship of EOR type and quality and its associations with internal communication efforts and an employee job-related outcome, it is necessary to examine how relationship norms work for employees to develop perceptions about different types of relationship with their organizations and, subsequently, to assess perceived relationship qualities. Much of EOR literature has emphasized positive EOR qualities as the consequences of organizational communication strategies – e.g. symmetrical communication (Kang and Sung, 2017; Men, 2014), transparent communication (Jiang and Men, 2017; Yue et al., 2019), and information resources (Craig and Allen, 2013). Moreover, scholars have mostly focused on employee-perceived job-related outcomes as the immediate consequences of EOR qualities – e.g. job engagement (Kang and Sung, 2017; Men, 2015), job satisfaction (Men, 2014), advocacy intention (Kang and Sung, 2017; Kim and Rhee, 2011), organizational justice perception (Kang and Sung, 2019), and organizational commitment (Walden et al., 2017).

Particularly in the EOR context, mutual obligations and expectations under psychological contracts uphold continuous interactions between exchange partners (Robinson, 1996). Relationship norms between an organization and its employees in a unique relational context appear more noticeable than in any other public relationship. Thus, this study attempts to identify the closely related yet distinct elements of relationship outcome concepts by examining the associations between two perceived EOR types – exchange and communal EORs – and four perceived EOR qualities – trust in an organization, satisfaction in relationships with an organization, commitment to relationships with an organization, and control mutuality in relationships with an organization (trust, satisfaction, commitment, and control mutuality, hereafter). Given that EOR outcomes are understood as perceptual states (Ledingham, 2003; Shen, 2017), in this study we focus on individual employees’ perceptions of EOR outcomes, their antecedent, and consequence and thus expect to discuss perceived EOR outcomes that can be used for designing internal communication and relationship management strategies in accord with the attributes of specific EOR typologies and qualities.

EOR types: the rules of exchange
Interpersonal and public relationship scholars have conceptualized relationship types by identifying that the nature of a relationship can be determined by “properties of exchanges, transactions, communications, and other interconnected activities” (Broom et al., 1997, p. 94). Since the perceived
strength of the norms governing behaviors in a relationship vary (Johnson and Grimm, 2010), all relationships are not identically formed by relational parties; different relationship types can simultaneously be developed and perceived by relational parties (Hung, 2005).

Hon and Grunig's (1999) research distinguished between the relationship types previously identified by Clark and Mills (1979). Exchange relationships are based on both parties' expectations that they will receive benefits of comparable value in return; whereas communal relationships are characterized by both parties benefiting without a reciprocation motive to satisfy the other's needs (Mills and Clark, 1986). These two relationship types are distinct but simultaneously not entirely exclusive (Lee and Kim, 2020). Even in an exchange relationship, relational parties may reciprocate with benefits, thereby reaching the win-win situation that those parties would also experience in a communal relationship (Hung, 2005).

The nature of such relational norms functions in an organization's relationships with its employees more obviously than with any other stakeholders because employee relations are based on a formal psychological contract requiring mutual interdependency and obligations (Ni, 2007). Two types of relationships in the EOR context – exchange and communal EORs – have played significant roles in helping researchers understand the mechanisms of relationship norms between an organization and its employees. Exchange norms should work as “building-blocks” for establishing EORs (Bruning and Ledingham, 1999, p. 160). In addition to how well different norms are met, EOR scholars have noted the value of developing relationships that are based on more than just a reciprocal economic responsibility to relational parties (Coyle-Shapiro and Conway, 2004).

EOR studies have drawn upon the social exchange theory (SET) to understand the unique features of EORs by distinguishing different types of transactions in EORs – economic and social exchanges (Cropanzano and Mitchell, 2005). Whereas economic exchange involves financial needs and economic obligations as the foundation of exchange expectations, social exchange is characterized by mutual expectations of socio-emotional exchanges, which can “engender feelings of personal obligations, gratitude, and trust” (Blau, 1964, p. 94). The SET approach has demonstrated that employees value social exchange more than pure economic exchange in EORs if they desire increased socioemotional, rather than economic, outcomes (e.g. employees' social and esteem needs) (Foa and Foa, 1980). SET argues that there are strong associations between the degrees to which the rules of exchanges are fulfilled in EORs and employees' relational and job-related outcomes (Aryee et al., 2002). That is, employees are likely to demonstrate higher degrees of citizenship behaviors and in-role performances when the social exchange norms are reciprocated than when economic exchanges are met (Shore et al., 2006).

Employees' perceptions of EOR types are developed as results of an organization's interactions with its key internal stakeholders in institutional environments and by the influences of their corresponding cognitions, attitudes, and behaviors (Broom et al., 1997; Hung, 2005; Lee and Chon, 2020; Li et al., 2020). In this sense, it is necessary to further understand the associations between employees' EOR type perceptions and other organizational, relational, and job-related factors.
Symmetrical internal communication as an antecedent to EOR types

Relationship management scholars explain internal communication programs as an essential antecedent through which key publics enter into relationships with their organizations. When an organization exerts symmetrical practice for communication with its employees, reciprocal giving and receiving can occur through the process of “moving equilibrium,” rather than by the outcome of symmetry (Grunig, 2000, p. 33). Based on the excellence theory, it has been well-established that the symmetrical model of public relations allows an organization to use dialogue and research to bring about mutual understanding and adjustments with its key stakeholder publics for symbiotic outcomes (Grunig et al., 2003). Conversely, in the asymmetrical model of public relations, professionals use scientific research to persuade their publics to maximize organizational self-interests (Broom and Sha, 2013).

SIC facilitates “openness, relationships, reciprocity, network symmetry, horizontal communication, feedback, adequacy of information, employee-centered style, tolerance for disagreement, and negotiation” within relationships between an organization and its employees (Grunig, 1992, p. 558). Furthermore, symmetrical concepts in EORs help employees feel heard despite their lack of power within these relationships with their employers or supervisors (Ni, 2007), and foster perceptions of organizational effort and care for “the benefit of everyone in the organization” (Grunig, 1992, p. 564).

Previous public relations research has found that SIC is the pivotal antecedent for building quality EORs because its effectiveness facilitates mutual understanding and open interactions between management and employees, thereby nurturing quality EORs (Jo and Shim, 2005; Kang and Sung, 2017; Kim, 2007; Kim and Rhee, 2011; Park et al., 2014). When employees find that symmetrical communication occurs in their EORs, they are likely to perceive these relationships as beneficial to their welfare based on mutual understanding (Kang and Sung, 2017; Kim and Rhee, 2011; Men and Stacks, 2014; Park et al., 2014) [1]. Therefore, when EORs are maintained through mutual obligations that do not expect return benefits, employees are more likely to develop strong communal EORs (Coyle-Shapiro and Shore, 2007). For example, Kim (2007) demonstrated that symmetrical communication positively affected employees' perceptions of communal EORs but did not significantly influence their exchange EOR perceptions. These results suggest that employees believe that an organization cares about them, beyond economic exchanges, when they think their internal communication systems are open to different opinions.

Internal communication plays a critical role in developing employee perceptions of how their organization tries to develop relationships. From strategic communication and relationship management perspectives, it is important to investigate whether employees' perceptions of SIC would be more related to one of the perceived EOR types – either communal or exchange EORs – than the other. The current study proposes the following hypothesis about the association between the perceptions of SIC and EOR types:

\[ H1. \]

Employee evaluations of SIC will be more strongly associated with employee perceptions of communal EORs with their organizations than exchange EORs.
EOR qualities as consequences of EOR types

Hon and Grunig (1999) proposed guidelines for directly measuring the success of long-term public relationships as the fundamental goal of public relations, beyond measuring public relations outputs resulting from communication programs. Their measurement scale was developed using six indicators that empirically represent relationship outcomes. Within an internal context, all six indicators have been used to understand employees' relationships with an organization regarding the outcomes of public relations efforts (e.g. Kim, 2007; Lee and Kim, 2020). However, for a more precise understanding and accurate application of relationship outcomes, it is necessary to clarify the conceptual differences of EOR qualities from EOR types based on the relationship management and SET literature.

The multidimensional nature of EORs has been mostly measured by using the four outcomes of EORs: trust, satisfaction, commitment, and control mutuality. Employees' perceived trust indicates the extent to which employees can rely on their organization as an exchange partner. EOR studies have demonstrated that a reciprocal process which benefits both parties facilitates the development of trust and results in high-quality EORs (e.g. Brower et al., 2009; Dulebohn et al., 2012; Lee and Kim, 2020). Ozmen's (2019) empirical research showed significant associations between trust and both economic and social exchanges in EORs. Based on SET, EOR scholars (e.g. Coyle-Shapiro et al., 2016; Shore et al., 2009) noted that when employees perceive social exchange more than economic exchange, they build a high level of trust in EORs. Furthermore, social support from an organization can increase employees' loyalty as well as trust in the relationship with their organization when they think social exchange, more than economic exchange, is fulfilled by their organization (Cropanzano and Mitchell, 2005; Podsakoff et al., 2000).

Drawing on SET, employees' satisfaction with their relationship with an organization means that the perceived levels of favorable feelings toward that organization result from their expectations being fulfilled by the organization. Through interviews with multinational employees, Ni (2007) found that satisfaction is a critical factor to determine how fairly exchange norms work as a foundation for employees' relationships with their organization and supervisors. Empirical research has shown that employees are satisfied with their EORs when they believe their organization expects both short- and long-term interests while providing benefits to them: for example, within egoistic or provident relationships (Lee and Kim, 2020). The perceived level of satisfaction is understood to be a strong indicator for developing a quality relationship (Waters and Bortree, 2012) and is likely to be strengthened when employees think their EOR is considered communal (Lee and Kim, 2020).

Commitment in EORs addresses employees' perceptions of whether their relationships with an organization are worth maintaining and promoting. Drawing on psychological contract theory and organizational support theory, EOR research (e.g. Coyle-Shapiro and Shore, 2007; Coyle-Shapiro and Conway, 2005; Shore and Coyle-Shapiro, 2003) emphasizes that when employees think their organization fulfills reciprocal obligations, they are likely to believe their organization is committed to them and will therefore try to maintain their EORs. As an outcome of the perceived quality of exchange, commitment in EORs is also a critical variable that distinguishes social exchanges from purely economic exchanges in relationships with repetitive exchanges under employment contracts (Cook and Emerson, 1978; Shore et al., 2009). In this sense, the commitment level will likely become
higher if EOR types, as perceived by employees, are more strongly related to social exchanges rather than economic exchanges.

*Control mutuality* perceived by employees in EORs refers to the degree to which employees think they have mutual control and influence over interactions with their organization. When individual employees have a greater locus of control in a relationship with their supervisors, they will likely develop better quality relationships and enhance organizational effectiveness (Honold, 1997; Martin et al., 2005). An employee may perceive a certain amount of rightful control to influence an organization if they feel that the norm of reciprocity is fulfilled within exchange EORs (Hon and Grunig, 1999). An organization has inherently more control and resources than its employees; however, if employees' interdependent transactions in EORs — from financial and tangible values and socioemotional needs — are properly reciprocated by an organization, employees will feel empowered and perceive a high level of control mutuality in their EORs (Cropanzano and Mitchell, 2005). In this sense, when employees feel that they have a lot of say in their work and decision-making processes, they are more likely to think that their organization is concerned about their welfare because it appears to empower them to exert reasonable control on EORs.

Depending on what type of relationship an organization has developed with its publics, the overall perceived levels of relationship qualities are likely to differ. For example, if employees think that an organization has built a stronger exchange EOR (compared to a communal EOR), the degree of EOR qualities that the organization holds will be perceived by the employees as barely higher than when they think the organization has developed a strong communal EOR. Based on previous research supporting the effects of the nature of exchange and communal EORs on the development of the four EOR qualities (Hung, 2005; Lee and Kim, 2020), this study suggests that there is a need to examine the specific relationships between two EOR types and four EOR qualities:

*H2a.* Employees' exchange EORs will be positively associated with trust.

*H2b.* Employees' exchange EORs will be positively associated with satisfaction.

*H2c.* Employees' exchange EORs will be positively associated with commitment.

*H2d.* Employees' exchange EORs will be positively associated with control mutuality.

*H3a.* Employees' communal EORs will be positively associated with trust.

*H3b.* Employees' communal EORs will be positively associated with satisfaction.

*H3c.* Employees' communal EORs will be positively associated with commitment.

*H3d.* Employees' communal EORs will be positively associated with control mutuality.

**Employee job engagement as the outcome of EOR qualities**

In the context of EORs, scholars have paid considerable attention to the psychological and organizational conditions of employee engagement (Kahn, 1990; Macey and Schneider, 2008; Saks, 2006). Mostly drawing from organizational psychology and human resources management theories such as the job demand-resources (JD-R) model and SET [2], scholars have approached the concept of employee job engagement as a primarily work-related construct (Bakker and Demerouti, 2008; Macey...
From the job demand-resources (JD-R) perspective, the EJE mechanism is primarily a function of two processes: *overtaxing*, due to job demands that lead to exhaustion, and *reduced motivation*, as a result of lacking job resources (Schaufeli and Bakker, 2004). Accordingly, the degree of EJE is affected by organizational structure and the social contexts of employment, such as organizational support (Biswas and Bhatnagar, 2013), transparent and symmetrical internal communication (Kang and Sung, 2017), and information resources (Walden et al., 2017).

From the SET perspective, EJE is a function of reciprocity norms generated via the mutual obligations of social exchange between employees and their organizations (Coyle-Shapiro and Shore, 2007). EJE develops when employees perceive positive organizational supports, which motivate them to exert more efforts in their job (Saks, 2006). SET scholars argue that a series of interactions that occur between relational parties are likely to generate reciprocal interdependence and mutual obligations over time (Tsui et al., 1997). Consequently, when parties in a relationship abide by certain rules of exchange, over time their relationship evolves and can be characterized by mutual trust, commitment, and loyalty (Cropanzano and Mitchell, 2005). Even though the formal contractual norms of EOR are governed primarily by economic exchange, higher quality EORs develop when employees perceive that they have received socio-emotional supports from their organization (Coyle-Shapiro and Shore, 2007). As a result of positive attitudes developed via continuously affirmed mutual EOR exchanges, employees are more likely to develop emotional bonds with their organizations and reciprocate these positive feelings with a higher level of job performance marked by high energy and enthusiasm, i.e. EJE (Coyle-Shapiro and Shore, 2007).

According to Saks (2006), EJE is not an attitude but “the degree to which an individual is attentive and absorbed in the performance of their roles.” This is also echoed in Schaufeli et al.’s (2002) view of EJE “as a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption” (p. 74). Based on these views, engaged employees demonstrate high levels of energy, dedication, and engrossment in their jobs compared to disengaged employees (Maslach et al., 2001; Schaufeli et al., 2002) as a result of social contextual factors (i.e. organizational supports and resources) that lead to quality EOR perceptions, consequently affecting employees’ motivations to do their job well (Kang and Sung, 2017; Macey and Schneider, 2008; Men, 2015). On the other hand, when employees perceive that their organization has failed to fulfill its obligations (Zhao et al., 2007), they are more likely to think that their interactions with the organization are less valuable and less satisfactory and will reciprocate the unmet expectations by reducing EJE (Agarwal and Bhargava, 2013). As such, research supports the link between EJE and organizational and individual factors: exchange quality between employees and their organization (Coyle-Shapiro and Shore, 2007); relationship quality in EOR dimensions (Kang and Sung, 2017; Men, 2012). However, few studies have identified the relationship between particular EOR subconstructs and employee outcomes. This study proposes the necessity of a more precise understanding of how each subdimension of an EOR quality is related to EJE with the following research question:

*RQ1.* How differently will employees’ perceptions of (a) trust, (b) satisfaction, (c) commitment, and (d) control mutuality with their organizations be associated with their *EJE*?
Methods
We conducted an online survey through Qualtrics.com in April 2017. This survey firm maintains panel members of 1.8 million in the US and has frequently been used for employment research, as researchers can have on-demand respondents according to their target demographics (Brandon et al., 2013).

A pretest (N = 100) was conducted to check whether there were any measurement items that needed clarification for increasing better survey quality. We revised them based on the pretest results. In the main test, after agreeing to participate via informed consent, participants answered questions measuring the study's main variables. Demographic information was gathered at the end of the survey.

Measures
The final items used a 7-point Likert scale, from strongly disagree (1) to strongly agree (7), and are provided in Table 1. Perceived SIC was measured using Dozier et al. (1995) and Kim's (2007) scales (α = 0.92). For the EOR types and qualities, this study used Hon and Grunig's (1999) scales: communal (α = 0.92) and exchange EORs (α = 0.91), trust (α = 0.94), satisfaction (α = 0.95), commitment (α = 0.95), and control mutuality (α = 0.95). We checked VIF values below 10 to confirm there was no multicollinearity among the four EOR qualities (Hair et al., 2010). Perceived EJE was measured using three dimensions from Schaufeli et al.'s (2002) scales: vigor (α = 0.88), dedication (α = 0.93), and absorption (α = 0.84).

The average age of participants was 36.78 (SD = 10.31), ranging from 19 to 67 years old. Of the participants, 49.5% (n = 398) were male and 50.5% (n = 406) were female. The average number of years working for a current company was 7.64 (SD = 7.03). The majority of participants were White (69.2%, n = 556), followed by Asian or Asian-American (10.9%, n = 88), African American (9.8%, n = 79), Hispanic/Latino (6.7%, n = 54), and other races (3.4%, n = 27). In terms of education, 11.3% had a high school degree, 29.1% had a two-year degree, 33.7% had a bachelor's degree or less than a four-year university degree, and 25.8% had a post-graduate degree.

Participants
Study samples were recruited in accordance with the following criteria: (1) full-time employees working in medium and large corporations with 300 or more employees in the US, which are more likely to be capable to implement and possibly apply communication programs (Chen, 2008); (2) panels that are representative of gender and region based on the 2017 US Census estimate value; and (3) workers in major 16 industries [3], based on the Bureau of Labor Statistics from the US Department of Labor. As compensation, the 830 participants in the main test were paid with an online gift card comparable as US$4.80. The total number of participants used in the data analysis was 804, after deleting outliers (N = 14) [4] and missing data (N = 12).

Data analysis
We conducted a two-step SEM using AMOS 27 so that model specification could be diagnosed before the structure was assessed (Byrne, 2016). A CFA was conducted to test whether a given measurement model was valid through model convergence and an acceptable range of parameter estimates, fit indices, significance of parameter estimates, modification indices, and measurement invariance
After assessing the measurement model validity, a structural model was utilized to test the hypotheses and explore the research question.

**Results**

First, a CFA was conducted to confirm measurement invariance. Based on results from the initial CFA, there were construct validity issues for one item from exchange EORs because the item did not meet the minimum level of beta coefficients (i.e. $\beta = 0.50$) (Hair et al., 2010). We also assessed convergent validity; one item from symmetrical communication and six items from EJE of the standardized factor loadings were less than 0.71, which affected the average of the squared standardized lambda estimates (average variance extracted (AVE) ≥ 0.50; Fornell and Larcker, 1981). After we compared conceptual definitions with the eight items, the final CFA eliminating the items achieved an acceptable model in terms of Hu and Bentler (1999) (i.e. CFI ≥ 0.95 and SRMR ≤ 0.08 or RMSEA ≤ 0.05 and SRMR ≤ 0.08) and Hair et al.'s (2010) (i.e. $\chi^2$/df ≤ 3.00, TLI ≥ 0.90, SRMR ≤ 0.08 with CFI ≥ 0.92, and RMSEA ≤ 0.07 with CFI ≥ 0.92) joint criteria. In the final CFA model, construct validity (standardized loading estimate > 0.50, AVE > 0.50) and composite reliability (CR > 0.70) were fulfilled under Hair et al.'s (2010) golden rule. As a result, the final CFA model achieved the acceptable model fit: $\chi^2(904, N = 804) = 2749.26$, $p = 0.00$, $\chi^2$/df = 3.04, CFI = 0.96, TLI = 0.95, RMSEA = 0.05, SRMR = 0.04 (See Table 1).

Second, the proposed SEM achieved an acceptable model fit, $\chi^2(1029, N = 804) = 3138.59$, $p = 0.00$, $\chi^2$/df = 3.05, CFI = 0.95, TLI = 0.94, RMSEA = 0.05, and SRMR = 0.04, 90% CIs [0.05, 0.05], PCLOSE = 0.78, in terms of Hu and Bentler (1999) and Hair et al.'s (2010) joint criteria. Bootstrapping ($N = 5,000$) was performed for the direct effect analyses. Age, gender, and work year were controlled. The structural model was modified by using residual covariances within the same construct.

The results demonstrated statistical significance in the relationships between employees' perceived levels of SIC and their perceptions of communal EORs with their organization ($\beta = 0.92$, $p < 0.001$). However, the results showed statistically insignificant associations between employees' perceptions of SIC and exchange EORs. The extent to which employees evaluated their organization's symmetrical communication was associated with their perceptions of communal, rather than perceived exchange EORs; thus, the results supported H1.

Next, the results demonstrated the statistical significance of relationships between both exchange EORs and each of the perceived EOR qualities; perceived exchange EOR types were positively associated with the four perceived EOR qualities. In sum, H2a, H2b, H2c, and H2d were supported. Specifically, the standardized coefficient indicating a relationship of exchange EORs with control mutuality was the highest ($\beta = 0.07$, $p < 0.001$), as follows by the coefficients of the employees' perceived satisfaction ($\beta = 0.05$, $p < 0.01$), commitment ($\beta = 0.03$, $p < 0.05$), and trust ($\beta = 0.03$, $p < 0.05$).

Also, the results indicated that the perceived communal EORs have a statistical significance on relationships with each of the EOR qualities; H3a, H3b, H3c, and H3d were supported. Compared with the standardized coefficients of the perceived exchange EOR, perceived communal EORs showed
higher coefficients of respondents' perceptions about trust ($\beta = 0.99, p < 0.001$), satisfaction ($\beta = 0.96, p < 0.001$), commitment ($\beta = 0.97, p < 0.001$), and control mutuality ($\beta = 0.97, p < 0.001$).

Finally, SEM results demonstrated a statistically significant association between respondents' perceptions of satisfaction and EJE ($\beta = 0.54, p < 0.001$). Therefore, the results indicated that employees' perceptions about relationships with their organizations are likely to relate to employees' perceptions in terms of vigor, dedication, and absorption to/in their jobs. The relationships of the rest of the perceived EOR qualities with EJE were not statistically significant (see Table 2 and Figure 1).

Discussion
This study investigated relationships between employees' perceptions of EOR outcomes: two EOR types – exchange and communal EORs – and four EOR qualities – trust, satisfaction, commitment, and control mutuality. We operationalized the six EOR outcomes as employees' perceptions developed by mutual benefits, obligations, and expectations to their organization and examined associations between each of the two EOR types and each of the four EOR qualities. To further examine the role of the interrelationship between perceived EOR outcomes, we suggested SIC as an antecedent to employees' perceptions about two different EOR types, relying on relationship management theory and excellence theory. Also, from the combined approach of the JD-R model and SET, employees' evaluations about the four EOR qualities were explored in this study as a key driver of developing EJE.

The findings from the SEM analysis of this study model largely support associations linked with perceived EOR types and qualities. The results of this study demonstrate that employees' perceptions of communal EORs, rather than exchange EORs, could be formed by their evaluation of organizational efforts in symmetrical communication with them. Also, this study focuses on the role of each of the EOR qualities in an employee job-related outcome by showing a significant relationship between satisfaction and EJE and insignificant relationships between the other three quality indicators and EJE.

As demonstrated associations between EOR types and qualities, this study finds that EOR types are differently but concurrently developed and impact the different levels of EOR quality dimensions. The findings of this study support the argument from public relations and organizational science literature that suggests the enhancement of EOR qualities is related to the EOR types developed by individual employees' perceptions about their organization's benefit reciprocity (formed through psychological contracts), as well as about its motivation in caring about employee interests (e.g. Hung, 2005; Lee and Kim, 2020). Nevertheless, when the associations between EOR types and the four quality indicators were compared, it should be noted that communal EORs showed much stronger associations with the quality indicators than with exchange EORs.

Significant associations between EOR types and qualities support the argument that employees' assessments of EOR qualities might be affected by the EOR types organizations attempt to develop (Hon and Grunig, 1999; Hung, 2005). EOR types imply properties that determine the EOR quality, and the extent to which norms of expectations, whether it be economic or socio-emotional, in the EOR largely determines EOR quality. Being distinguished from EOR types, EOR qualities could play a barometer as multidimensional evaluative elements representing the excellence of EORs as consequences.
In terms of an antecedent of the development of EOR types, the results of this study suggest that individual employees could develop their perception of communal EORs that is governed by more than economic exchanges, when they perceive their organization's communication efforts to be symmetrical. The positive associations between communal EORs and SIC in this study revalidate associations between symmetrical communication and communal EORs, as found in Kim's (2007) study. Also, supporting previous research (e.g. Kang and Sung, 2017; Kim, 2007; Men, 2014; Park et al., 2014), the findings emphasize the importance of SIC to help raise the value of internal communication efforts for developing high-quality mutual relationships with an organization's employees in the long-term. The significant relationship only between SIC and communal EORs indicates that exchange and communal EORs should be theoretically regarded as distinct categories of EOR types that can be developed and identified by employees.

Finally, this study demonstrates that employees' satisfaction in a relationship with their organization is significantly associated with strengthening their motivated mindset toward job and workplace. Although this study could not find a significant direct effect between trust and EJE, EJE literature suggests that trust is still a critical factor in strengthening EJE. According to previous studies (e.g. Agarwal, 2014), employees can better engage with their workplace and work performance when perceiving that an organization will fulfill mutual obligations in accordance with their psychological contract. By more closely investigating the relationship between relational trust and EJE in EORs, Basit (2017) demonstrated that trust can help employees feel greater psychological safety and obligation to their work role.

This study investigates each of the EOR quality indicators in accordance with relationship management scholars' call for further research on the attributes of relationship quality between an organization and its key stakeholders and the outcomes beyond relationship quality (e.g. Huang and Zhang, 2013; Shen, 2017). The insignificant finding regarding the relationship between control mutuality and EJE in this study implies that individual employees perceive a power imbalance in EORs. The power difference between an organization and its employees would significantly increase negative employee outcomes, such as turnover intentions, rather than positively affecting EJE (Griffeth et al., 2000; Ni, 2007).

Also, this study found statistically insignificant associations of commitment and control mutuality with EJE. Focusing on commitment to an organization, Walden et al. (2017) showed that job engagement increased commitment to an organization. The results of this study and Walden et al. (2017) research provide two methodological implications. The causal order between each of the EOR qualities and employee work-related engagement needs to be further studied. Also, the significant effects of overall good EOR qualities on EJE in previous public relations literature might have been supported by the different degrees of each of the relationship qualities. As a multidimensional concept, other relational attributes instead of control mutuality or commitment might be more critical antecedents for enhancing employee work-related engagement.

Previous research about the core attributes of EJE demonstrates that once employees feel engaged in and dedicated to their job performance, EJE can drive the employee’s desire to put more efforts into continuing the relationship with their organization (Walden et al., 2017; Vecina et al., 2013). Overall, in alignment with recent research (e.g. Men et al., 2020), the current study's findings on how the satisfaction dimension of EOR influences EJE suggest that employee satisfaction is the strongest driver
of EOR quality for increasing EJE. Organizations must improve employee satisfaction because it is a crucial foundation of a quality EOR and leads to heightened and engaged employee performance.

Limitations and future studies
The function of symmetrical public relations is to foster boundary spanners who connect the management of an organization with its publics. Symmetrical communication can become a critical orientation that helps an organization embrace internal participative culture (Grunig et al., 2003). Along with communication symmetry, organizational culture needs to be examined as another antecedent to employees' perceptions of different relationship types. Organizational culture is understood as the shared assumptions of an organization's members. This culture helps members understand specific organizational values, norms, and functionings (Lund, 2003). Different organizational cultures (e.g. integrative vs. hierarchical or organic vs. mechanistic) will also likely affect employees' different perceptions of relationship types, thereby reinforcing or diminishing positive employee outcomes (Song et al., 2009). In addition, employees' perceptions about organizational structures or justice could possibly be related to different EOR type developments, thereby reinforcing or diminishing positive employee outcomes (Kim, 2007; Song et al., 2009).

Longitudinal research is needed to explore the development of EORs over time. The perception of relationships can gradually evolve from exchange to communal as an organization and its employees maintain their relationships (Hung, 2005). Due to methodological limitations, this study was only able to examine employees' perceptions at the particular time when the participant completed the online survey with nonprobability sampling that may cause a sampling bias. Also, since environmental and organizational changes (e.g. COVID-19) may significantly impact employees' perceptions about EORs (Li et al., 2021), it will be necessary to observe external factors that are likely to influence relational and job-related outcomes. In the future, researchers should capture several moments to examine how perceptions of EORs change over time. Long-term observations would provide a clearer understanding of the effectiveness of internal communication and relationship management to public relations practitioners as well as researchers. Furthermore, it will be necessary to examine the interrelationships between perceived relationship types and qualities in an EOR context, considering relationship management research has shown directional, causal relationships between OPR outcomes (e.g. Bortree, 2010; Jo, 2018).

Also, future research should further divide the job positions that can influence employees' perceptions of their relationships with their companies and their job-related outcomes (Coyle-Shapiro and Shore, 2007; Lee, 2017; Ni, 2007). For example, middle managers, who work as employees as well as employers to other lower-ranking employees, may not carry the same formal obligations and interests that other, lower-ranking employees might have (Hallier and James, 1997). Thus, these higher-ranking employees would likely show different associations between how they perceive communication with their organizations, the nature of their relationships with their organizations, and their attitudes toward their work.

Conclusion
Employees contribute to the essential input functions of an organization by providing “labor and resources to create products and services” (Rawlins, 2006, March, p. 4). As building quality EORs is
critical to both an organization and its employees, it will be necessary in EOR research to further investigate the interrelationships between EOR outcomes and more sophistically examine the associations between EOR types and qualities and those relationships with other factors – especially organizational communication symmetry and employee job engagement.

Instead of testing the overall value of EOR qualities, this study attempts to demonstrate the interrelationship between each of the two EOR types and each of the four EOR qualities. The empirical evidence of relationship qualities with both internal and external stakeholders has been suggested by an overall value of the essential dimensions primarily through a second-order measurement model of SEM. However, this multidimensional concept can be characterized by other relational attributes, such as openness, involvement, investment (Ledingham and Bruning, 1998), and face and favor in Eastern culture (Huang, 2001). Because all these different relational subdimensions can represent the overall relationship quality, examining the one-on-one associations of each of the EOR quality dimensions with other variables in this study could contribute more to relationship management theory.

This study’s results could provide guidance for EOR research and communication and relationship strategies in practice. When employees think that an organization is responsive to their different opinions and shares information about important changes with them, employees are likely to believe their organization will reciprocate by providing more benefits for them, despite the inherently imbalanced division of power within EORs. It is further useful for managers to understand the different influences that satisfaction with an organization has on EJE so that they can know “where to focus efforts to satisfy employees and what results can be reasonably expected if satisfaction is increased” (Fu et al., 2009, p. 339). Also, different relationships with employees' perceptions about job engagement with EOR qualities suggest that internal communication managers will need to understand which relationship elements are stronger or weaker than others and how the different degrees of the EOR quality subdimensions might influence the attitudes, perceptions, and behaviors of particular publics.

Figures

![Figure 1 Results of the final model](image-url)
Table 1 Measurement instruments \((N = 804)\)

<table>
<thead>
<tr>
<th>Latent variables</th>
<th>Measurement items</th>
<th>(M)</th>
<th>(SD)</th>
<th>(\beta)</th>
<th>(R^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symmetrical internal communication</td>
<td>My company encourages differences of opinion</td>
<td>5.02</td>
<td>1.79</td>
<td>0.91</td>
<td>0.83</td>
</tr>
<tr>
<td></td>
<td>The purpose of communication in my company is to help managers be responsive to the problems of employees</td>
<td>5.09</td>
<td>1.71</td>
<td>0.88</td>
<td>0.77</td>
</tr>
<tr>
<td></td>
<td>Supervisors encourage employees to express differences of opinion</td>
<td>5.04</td>
<td>1.80</td>
<td>0.89</td>
<td>0.79</td>
</tr>
<tr>
<td></td>
<td>Employees are usually informed about major changes in policy that affect our job before they take place</td>
<td>5.08</td>
<td>1.84</td>
<td>0.79</td>
<td>0.62</td>
</tr>
<tr>
<td></td>
<td>I am comfortable talking to my manager when things are going wrong</td>
<td>5.48</td>
<td>1.69</td>
<td>0.77</td>
<td>0.59</td>
</tr>
<tr>
<td></td>
<td>([M = 5.14, SD = 1.76, CR = 0.93, AVE = 0.72])</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communal EORs</td>
<td>My company is very concerned about the welfare of people like me</td>
<td>5.05</td>
<td>1.80</td>
<td>0.91</td>
<td>0.83</td>
</tr>
<tr>
<td></td>
<td>I do not feel that my company takes advantage of people who are vulnerable</td>
<td>5.32</td>
<td>1.70</td>
<td>0.76</td>
<td>0.58</td>
</tr>
<tr>
<td></td>
<td>I do not think that my company succeeds by stepping on other people</td>
<td>5.30</td>
<td>1.73</td>
<td>0.77</td>
<td>0.59</td>
</tr>
<tr>
<td></td>
<td>My company helps people like me without expecting anything in return</td>
<td>4.81</td>
<td>1.84</td>
<td>0.84</td>
<td>0.71</td>
</tr>
<tr>
<td></td>
<td>I consider my company to be a particularly helpful organization</td>
<td>5.41</td>
<td>1.59</td>
<td>0.83</td>
<td>0.69</td>
</tr>
<tr>
<td></td>
<td>([M = 5.18, SD = 1.73, CR = 0.91, AVE = 0.68])</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exchange EORs</td>
<td>Whenever my company gives or offers something to people like me, it generally expects something in return</td>
<td>4.49</td>
<td>1.88</td>
<td>0.93</td>
<td>0.86</td>
</tr>
<tr>
<td></td>
<td>Even though people like me have had a relationship with my company for a long time, it still expects something in return whenever it offers us a favor</td>
<td>4.36</td>
<td>1.91</td>
<td>0.92</td>
<td>0.85</td>
</tr>
<tr>
<td></td>
<td>My company will compromise with people like me when it knows that it will gain something</td>
<td>4.39</td>
<td>1.88</td>
<td>0.79</td>
<td>0.62</td>
</tr>
<tr>
<td></td>
<td>([M = 4.41, SD = 1.89, CR = 0.91, AVE = 0.78])</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trust</td>
<td>My company treats people like me fairly and justly</td>
<td>5.32</td>
<td>1.70</td>
<td>0.86</td>
<td>0.74</td>
</tr>
<tr>
<td></td>
<td>Whenever my company makes an important decision, I know it will be concerned about people like me</td>
<td>4.87</td>
<td>1.86</td>
<td>0.90</td>
<td>0.81</td>
</tr>
<tr>
<td></td>
<td>My company can be relied on to keep its promises</td>
<td>5.13</td>
<td>1.73</td>
<td>0.90</td>
<td>0.81</td>
</tr>
<tr>
<td></td>
<td>I believe that my company takes the opinions of people like me into account when making decisions</td>
<td>4.79</td>
<td>1.90</td>
<td>0.90</td>
<td>0.81</td>
</tr>
<tr>
<td></td>
<td>I feel very confident about my company's skills</td>
<td>5.47</td>
<td>1.52</td>
<td>0.80</td>
<td>0.64</td>
</tr>
<tr>
<td></td>
<td>My company has the ability to accomplish what it says it will do</td>
<td>5.66</td>
<td>1.44</td>
<td>0.75</td>
<td>0.56</td>
</tr>
<tr>
<td></td>
<td>([M = 5.20, SD = 1.69, CR = 0.94, AVE = 0.73])</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satisfaction</td>
<td>I am happy with my company</td>
<td>5.44</td>
<td>1.65</td>
<td>0.90</td>
<td>0.81</td>
</tr>
<tr>
<td></td>
<td>Both my company and people like me benefit from the relationship</td>
<td>5.40</td>
<td>1.59</td>
<td>0.90</td>
<td>0.81</td>
</tr>
<tr>
<td></td>
<td>Most people like me are happy in their interactions with my company</td>
<td>5.17</td>
<td>1.65</td>
<td>0.90</td>
<td>0.81</td>
</tr>
<tr>
<td>Commitment</td>
<td>I feel that my company is trying to maintain a long-term commitment to people like me</td>
<td>5.16</td>
<td>1.83</td>
<td>0.92</td>
<td>0.85</td>
</tr>
<tr>
<td>---------------------</td>
<td>-------------------------------------------------------------------------------------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td></td>
<td>I can see that my company wants to maintain a relationship with people like me</td>
<td>5.10</td>
<td>1.79</td>
<td>0.92</td>
<td>0.85</td>
</tr>
<tr>
<td></td>
<td>There is a long-lasting bond between my company and people like me</td>
<td>5.04</td>
<td>1.80</td>
<td>0.93</td>
<td>0.86</td>
</tr>
<tr>
<td></td>
<td>Compared to other companies, I value my relationship with my company more</td>
<td>5.18</td>
<td>1.76</td>
<td>0.88</td>
<td>0.77</td>
</tr>
<tr>
<td></td>
<td>I feel a sense of loyalty to my company</td>
<td>5.41</td>
<td>1.65</td>
<td>0.84</td>
<td>0.71</td>
</tr>
<tr>
<td>[M = 5.31, SD = 1.63, CR = 0.95, AVE = 0.80]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control mutuality</td>
<td>My company and people like me are attentive to what each other say</td>
<td>5.29</td>
<td>1.55</td>
<td>0.85</td>
<td>0.72</td>
</tr>
<tr>
<td></td>
<td>My company believes the opinions of people like me are legitimate</td>
<td>5.11</td>
<td>1.70</td>
<td>0.92</td>
<td>0.85</td>
</tr>
<tr>
<td></td>
<td>My company really listens to what people like me have to say</td>
<td>4.97</td>
<td>1.83</td>
<td>0.93</td>
<td>0.86</td>
</tr>
<tr>
<td></td>
<td>The management of my company gives people like me enough say in the decision-making process</td>
<td>4.76</td>
<td>1.88</td>
<td>0.88</td>
<td>0.77</td>
</tr>
<tr>
<td></td>
<td>I believe people like me have influence on the decision-makers of my company</td>
<td>4.80</td>
<td>1.95</td>
<td>0.86</td>
<td>0.74</td>
</tr>
<tr>
<td>[M = 4.99, SD = 1.78, CR = 0.95, AVE = 0.79]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employee job</td>
<td>Vigor [M = 5.28, SD = 1.58]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>engagement</td>
<td>• When I get up in the morning, I would feel like going to work</td>
<td>5.27</td>
<td>1.69</td>
<td>0.86</td>
<td>0.74</td>
</tr>
<tr>
<td></td>
<td>• At my work, I feel bursting with energy</td>
<td>5.02</td>
<td>1.60</td>
<td>0.83</td>
<td>0.69</td>
</tr>
<tr>
<td></td>
<td>• At my job, I feel strong and vigorous</td>
<td>5.72</td>
<td>1.36</td>
<td>0.80</td>
<td>0.64</td>
</tr>
<tr>
<td>[CR = 0.88, AVE = 0.79]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Absorption [M = 5.18, SD = 1.55]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Time flies when I am working</td>
<td>5.40</td>
<td>1.52</td>
<td>0.77</td>
<td>0.59</td>
</tr>
<tr>
<td></td>
<td>• I get carried away when I am working</td>
<td>4.99</td>
<td>1.60</td>
<td>0.73</td>
<td>0.53</td>
</tr>
<tr>
<td></td>
<td>• I am immersed in my work</td>
<td>5.02</td>
<td>1.59</td>
<td>0.75</td>
<td>0.56</td>
</tr>
<tr>
<td></td>
<td>• I feel happy when I am working intensely</td>
<td>5.30</td>
<td>1.51</td>
<td>0.77</td>
<td>0.59</td>
</tr>
<tr>
<td>[CR = 0.88, AVE = 0.79]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note(s):** $\chi^2 (904, N = 804) = 2749.26, p = 0.00, \chi^2/df = 3.04$, Comparative Fit Index (CFI) = 0.96, Tucker Lewis Index (TLI) = 0.95, Root Mean Square Error of Approximation (RMSEA) = 0.05, and Standardized Root Mean Residual (SRMR) = 0.04
Table 2 SEM results

<table>
<thead>
<tr>
<th>H</th>
<th>IV</th>
<th>DV</th>
<th>b</th>
<th>SE</th>
<th>θ</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>SIC</td>
<td>Exchange EORs</td>
<td>0.02</td>
<td>0.05</td>
<td>0.02</td>
<td>0.663</td>
</tr>
<tr>
<td></td>
<td>SIC</td>
<td>Communal EORs</td>
<td>0.91</td>
<td>0.04</td>
<td>0.92</td>
<td>***</td>
</tr>
<tr>
<td>H2a</td>
<td>Exchange EORs</td>
<td>Trust</td>
<td>0.03</td>
<td>0.01</td>
<td>0.03</td>
<td>0.023*</td>
</tr>
<tr>
<td>H2b</td>
<td>Exchange EORs</td>
<td>Satisfaction</td>
<td>0.04</td>
<td>0.01</td>
<td>0.05</td>
<td>0.005**</td>
</tr>
<tr>
<td>H2c</td>
<td>Exchange EORs</td>
<td>Commitment</td>
<td>0.03</td>
<td>0.02</td>
<td>0.03</td>
<td>0.048*</td>
</tr>
<tr>
<td>H2d</td>
<td>Exchange EORs</td>
<td>Control mutuality</td>
<td>0.05</td>
<td>0.01</td>
<td>0.07</td>
<td>***</td>
</tr>
<tr>
<td>H3a</td>
<td>Communal EORs</td>
<td>Trust</td>
<td>0.83</td>
<td>0.03</td>
<td>0.99</td>
<td>***</td>
</tr>
<tr>
<td>H3b</td>
<td>Communal EORs</td>
<td>Satisfaction</td>
<td>0.99</td>
<td>0.04</td>
<td>0.96</td>
<td>***</td>
</tr>
<tr>
<td>H3c</td>
<td>Communal EORs</td>
<td>Commitment</td>
<td>1.14</td>
<td>0.04</td>
<td>0.97</td>
<td>***</td>
</tr>
<tr>
<td>H3d</td>
<td>Communal EORs</td>
<td>Control mutuality</td>
<td>1.23</td>
<td>0.04</td>
<td>0.97</td>
<td>***</td>
</tr>
<tr>
<td>RQ1</td>
<td>Trust</td>
<td>EJE</td>
<td>-0.01</td>
<td>0.12</td>
<td>-0.02</td>
<td>0.919</td>
</tr>
<tr>
<td></td>
<td>Satisfaction</td>
<td>EJE</td>
<td>0.37</td>
<td>0.07</td>
<td>0.54</td>
<td>***</td>
</tr>
<tr>
<td></td>
<td>Commitment</td>
<td>EJE</td>
<td>0.10</td>
<td>0.07</td>
<td>0.17</td>
<td>0.137</td>
</tr>
<tr>
<td></td>
<td>Control mutuality</td>
<td>EJE</td>
<td>0.77</td>
<td>0.05</td>
<td>0.06</td>
<td>0.635</td>
</tr>
</tbody>
</table>

Note(s): \( \chi^2(1029, N = 804) = 3138.59, p = 0.00, \chi^2/df = 3.05, CFI = 0.95, TLI = 0.94, RMSEA = 0.05, \) and SRMR = 0.04. ***p < 0.001, **p < 0.01, *p < 0.05

Notes

1. Jo and Shim's study (2005) indicated that normative symmetrical communication is necessary for management's proactive engagement in building relationships by finding that organizational openness (sharing organizational news), feedback (helpful advice), and adequacy of information are important for enhancing management's relationship with its employees. This finding was supported by subsequent employee studies (Kim and Rhee, 2011; Park et al., 2014), suggesting that public relations management can improve the quality of EORs if organizational internal communication is managed more symmetrically. Furthermore, Men and Stacks (2014) elaborated the positive association between symmetrical communication and EORs by demonstrating that symmetrical communication encourages transparent communication practice through mutual understanding, collaboration, and reciprocity and, in turn, leads to favorable employee attitudes toward the organization (p. 315). More recently, Kang and Sung (2017) also substantiated the strong and positive effects of SIC efforts on EORs in a different cultural context (South Korea) from previous studies.

2. Noting certain limitations of explaining employee engagement based on either the JD-R model or SET in terms of each approach's inability to fully explain necessary and sufficient conditions for employee engagement to develop, some scholars (e.g. Jiang and Men, 2017; Rayton and Yalabik, 2014; Saks, 2006) have advocated for a combined approach using the JD-R model and SET in understanding what drives EJE as a psychologically motivated state of EJE.

3. The industries were as follows: agriculture, mining and oil/gas extraction, construction, manufacturing, wholesale trade, retail trade, transportation and warehousing, utilities,
Both univariate and multivariate outliers were checked and deleted when they were assessed as cases that extremely fell outside the distribution. Ten cases of standardized scores (z-scores) above $|3.29|$ ($p < 0.001$) (e.g., −3.51 and 3.43) were identified as univariate outliers; they were all deleted (Hair et al., 2010). In addition, multivariate outliers were detected by assessing the Mahalanobis $D^2$ measure using the $\chi^2$ distribution (Tabachnick and Fidell, 2013). Since four cases (e.g., 45, 53, 64, and 68) were extremely greater than the threshold levels for the multivariate outliers ($D^2/df = 4$ at $p < 0.001$), they were deleted (Hair et al., 2010).

References


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