

## Article

# Sustainable Interpersonal Interaction: Research on Instant Message and Helping from the Perspective of Sender

Xia Jiang <sup>1</sup>, Jing Du <sup>1</sup>, Tianfei Yang <sup>1,\*</sup> and Jinfan Zhou <sup>2</sup>

<sup>1</sup> School of Economics and Management, Wuhan University, Wuhan 430000, China; jiangxia@whu.edu.cn (X.J.); jdu@whu.edu.cn (J.D.)

<sup>2</sup> Department of Human Resource Management, School of Business, Nanjing University, Nanjing 210093, China; zhoujf@smail.nju.edu.cn

\* Correspondence: faye\_yang@whu.edu.cn

**Abstract:** Instant Messaging is widely used in people's daily life because of its convenience and timeliness. People have to deal with this communication almost every day. At present, most of the researches focuses on the instant messages of the receiver, but rarely explores the perspective of the sender. Based on the conservation of resources theory, we propose a model that initiates communication indirectly affects one's own follow-up helping behavior. The results showed that (a) Instant Message sent has a positive correlation with perceived work goal progress; (b) Perceived work goal progress mediates the relationship of Instant Message sent and helping; (c) The mediating effect of perceived work goal progress on the relationship between Instant Message sent and helping will be moderated by the usefulness of reply. Our study builds a framework to explain how sent instant messages can increase helping via perceived goal progress, broaden the knowledge of Instant Messaging and helping. The practical implications are further discussed.

**Keywords:** instant messages sent; usefulness of reply; perceived work goal progress; helping



**Citation:** Jiang, X.; Du, J.; Yang, T.; Zhou, J. Sustainable Interpersonal Interaction: Research on Instant Message and Helping from the Perspective of Sender. *Sustainability* **2021**, *13*, 402. <https://doi.org/10.3390/su13010402>

Received: 19 November 2020

Accepted: 30 December 2020

Published: 4 January 2021

**Publisher's Note:** MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



**Copyright:** © 2021 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

## 1. Introduction

With the rapid development of mobile technology, employees increasingly rely on Instant Messages (IM) to communicate and interact with each other [1]. Instant Messaging (IM), also known as online chat technology, allows two or more people to use the Internet to instantly transmit pictures, voice messages, file exchange, and even video chat [2]. Instant messaging tools such as WeChat, DingTalk, and Tencent QQ are increasingly used for professional purposes, providing extensive support for interpersonal and organizational communication [3,4]. Instant Messages allow unrestricted cooperation and support in space between organizations, teams, and individuals [5,6]. Especially influenced by COVID-19 from 2019 to the present, employees have reduced unnecessary face-to-face work, and the choice to communicate online has become a norm. Instant Messages are widely used to solve work-related issues [5,7,8], help employees share information quickly and extensively [9,10], and enhance the connection between employees [3,11].

Although there have been rich researches on Instant Messaging, there is one critical aspect of Instant Messages which still under-investigated. As a communication method, instant messaging is a bi-directional process, which has two parties. However, researchers paid most attention to instant message reception in current studies. Everyone not only passively accepts instant messages, but also actively sends instant messages. In this study, we would like to take the point of senders, who initiate instant messages. Generally speaking, we want to learn about what will happen after sending instant messages.

Instant messaging enables people to exchange information and make a tie with each other. Studies found that using instant messaging people would like to feel interactive and connected [3,12]. People usually send messages to acquire information, seek feedback, ask for help, and more, which will have an impact on the work performance, such as goal

progress. The effect of instant messaging is immediate and transient. Previous studies are limited because they considered instant messaging in a relatively long time, like weeks or months, or unspecified time frames. This is problematic because changes in resources are transient and happen every day [13–16]. We focus on short-term or more immediate consequences of instant messaging, as instant messages fluctuate daily in organizations. Therefore, a more appropriate empirical test of this process requires researchers to consider how instant messages sent affect subsequent behavior changes in the short term.

Helping behavior is very common in the work environment [15], and it appears in the interaction between colleagues almost every day [14,17]. Helping behavior at work contributes to the development of social capital [18], and can improve the team and organizational performance [19]. Therefore, we believe that the exploration of the antecedents of helping behaviors is very important. Especially under the influence of global COVID-19, it is particularly important to explore how online office communication affects interpersonal helping behavior. Thus, this study focused on how instant messages sent affect helping via perceived goal progress.

Hence, the primary goals of our research are four-fold. First, we aim to explore a link between initiates communication (instant messages sent) and helping behaviors by considering perceived goal progress. Second, whereas prior research has focused on the message-recipient, we initiate a shift in this line of work to the message-sender. Third, we focus on short-term or more immediate consequences of instant messages. Finally, throughout the research, we offer some future research directions aimed at advancing our understanding of how instant messages sent influence interpersonal interactions.

## 2. Theory Framework and Hypotheses

### 2.1. Conservation of Resource Theory

The main theme of conservation of resource theory (COR) is that individuals will work hard to protect, obtain, and construct resources that they think are valuable, and avoid the loss of those valuable resources [20–22]. Individuals adopt the strategy of resource conservation and use their available resources to adapt to the environment as much as possible. Successful adaptation will generate new resources so that their resources will be injected with new resources so that they can have more resources to resist losses. The popularization of instant messages in the workplace is inevitable, so mobilizing resources to adapt to the working environment and generating new resources through successful adaptation are in line with the real environment. Besides, the communication of instant messages can also strengthen social relationships by connecting the receiver and the sender. As a resource, social relations can also provide or promote the preservation of valuable resources. Resources such as social support can be dedicated to the abundance and maintenance of resource reserves. It is also an expected resource in itself that can be used to resist pressure. Although individuals who lack resources are more likely to adopt a defensive attitude to conserve their resources. However, in the long-term adaptation process, the preservation of resources is temporary. When conditions permit or there is an opportunity to obtain new resources, individuals still choose to invest in resources to obtain more resources.

### 2.2. Instant Messages Sent and Perceived Work Goal Progress

A growing number of studies have focused on people who receive instant messages will be interrupted [23,24], thereby affecting the progress of their daily work goals [10]. Instant messages often contain unexpected requests, which leads individuals to allocate resources to tasks they did not plan to perform, time and attention were siphoned away, and erodes employees' control over their daily work [10,25,26]. However, instant message communication is a dual interactive process. Previous studies suggested that instant messages contained unexpected requests that interrupted the progress of work. This view ignored the active initiator of instant messages. When people receive instant messages, they usually have to deal with unexpected requests from the other party. In other words,

actively initiating instant messages usually means requesting the other party to assist the sender in the work, allowing the other party to spend time and energy to provide a job or other resources for the sender, which can improve the sender's control over the work.

According to COR theory, people always strive to protect their existing resources and establish new resources [27]. The theory points out that work events and behaviors, such as proactively initiate communication with others, have implications for personal resources. Time and knowledge are all energy resources. That is to say, unlike receiving instant messages, which is a kind of interruption, actively sending instant messages usually means asking other people to provide resources for the sender, and to obtain supplementary resources from others. Specifically, we suggest that proactively initiating communication to obtain responses may help employees save and build resources, thereby promoting the goal process.

Based on these arguments, we suggest the following hypothesis:

**Hypothesis 1.** *Instant messages sent has a positive relationship with perceived work goal progress.*

### 2.3. Mediating Role of Work Goal Progress

The COR theory states that individuals will be motivated to continue to obtain resources, and they will achieve this through resource investment. When individuals perceive that they have sufficient resources, they will invest more resources to obtain more returns in the future. If employees feel the support of their colleagues, then the best strategy is to return colleagues, because they are more likely to provide support in the future [28,29]. That is to say, if more resources are perceived, resources will be invested to obtain more resources.

When employees find that their goals are progressing smoothly, individuals usually respond, analyze their current resources, and take actions to achieve further goals [10]. When the goal is perceived to be progressing smoothly, the individual is more likely to feel the greater ability and more resources to pursue the long-term goal. Studies have shown that personal goal progress can improve well-being and help individuals pursue more meaningful actions and successful life [30].

In other words, employees who perceive more progress toward goals are more likely to maintain interpersonal relationships through follow-up helping behaviors and improve their colleagues' and leaders' evaluations of themselves to promote their long-term development. Studies have shown that when employees perceive organizational support, positive treatment by coworkers, team cohesion, and cooperation, they are more willing to help colleagues [31–33].

In summary, we propose:

**Hypothesis 2.** *Perceived work goal progress (will) mediate the relationship between instant messages sent and helping.*

### 2.4. Moderated Mediation

Through the resource acquisition spiral, we take the initiative to send instant messages and obtain the effectiveness of the response from the other party as additional resources (time, knowledge, skills or support, etc.) to increase future resource investment behavior (helping) [34]. In other words, when employees obtain individual resources, they can invest these resources to obtain additional resources. Similarly, the resource investment of colleagues allows the sender to obtain resources (colleague support) and advance the progress of the goal, and then the sender will further invest in resources (helping) and obtain more resources (reputation, interpersonal relationship, influence, etc.) to form a resource acquisition spiral.

We have previously assumed that actively sending the message will have a positive impact on the progress of the perceived goal. The speed, usefulness, and meticulousness of the other party's response determine the degree of help to sender's work goal. Because

the other party's reply supplemented the sender's resources to varying degrees. The higher the usefulness of the response, the more resources the individual obtains from the outside world. Actively sending messages will have a greater impact on the progress of the perceived goal progress.

Hypothesis 2 describes the indirect effect of instant messages sent on the related results of our helping behavior. Combined with Hypothesis 2, we propose a moderated mediation effect, such that the positive indirect effects of instant messages sent on helping via goal progress depend upon how useful the reply is. Therefore, we assume that:

**Hypothesis 3.** *Usefulness of reply may moderate the indirect effect between instant messages sent and helping via perceived goal progress.*

To sum up, our research conceptual framework is shown in the Figure 1.

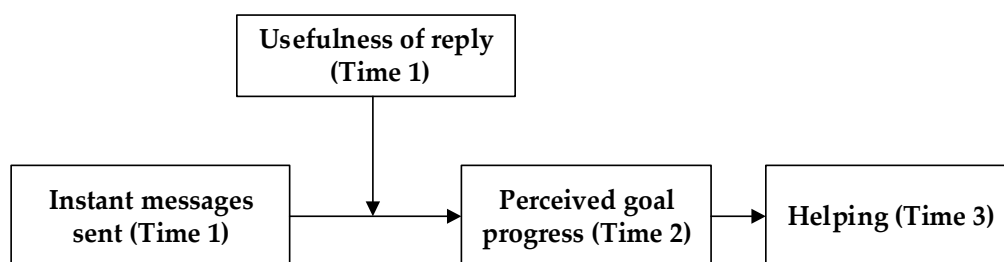


Figure 1. Conceptual framework.

### 3. Method

#### 3.1. Participants and Procedure

We distributed 500 electronic questionnaires to full-time employees of multiple companies in China through Wenjuanxing website (Wenjuanxing, a platform providing functions equivalent to “Amazon Mechanical Turk”). They come from different provinces and cities such as Hubei, Guangdong, Zhejiang, Jiangsu, and Beijing in China. Participants come from different industries, including real estate, education, insurance, automobile manufacturing, graphic design, nuclear industry, etc. All participants were informed in advance that the survey is voluntary, the results of the questionnaire were strictly confidential, and all data were used for research purposes only.

We use a three-stage questionnaire to obtain survey data. At Time 1, we collected information regarding sex, age, work experience years, education, instant messages sent, and usefulness of reply. The total number of usable responses was 447 after eliminating 53 problematic responses. At Time 2, participants reported goal progress. At Time 3, participants reported helping. We finally obtained 398 valid matched questionnaires (the effective response rate was 79.60%).

Of the 398 respondents, 71.60% were female and 28.40% were male; average organizational tenure was 7.70 years (SD = 5.31); 47.70% had kids; the average age was 30.76 years (SD = 4.68); 84.70% had a college degree or higher (See Table 1 for specific demographic information). Participants held occupational positions such as administrative staff, engineer, demand analyst, accountant, HR service agent, web developer, bidding and procurement engineer, and investment manager across a variety of industries. After statistical analysis, we found that there was no significant difference in gender, educational background, and other variables between the final round sample data and the first round sample data.

**Table 1.** Characteristics of respondents (N = 398).

Characteristics		Percent (%)
Gender	Male	28.4
	Female	71.6
Age	Under 25	9.8
	26–30	54.3
	36–40	18.1
	41–45	14.6
	Over 45	3.3
Education	Technical or Mechanical	15.3
	Bachelor	52.3
	Master	32.4
Work experience (years)	Under 5	41.7
	5–10	37.2
	11–15	12.6
	16–20	5.8
	Over 20	2.8
Types of company	State-owned enterprise	10.8
	Private enterprise	72.1
	Foreign enterprise	14.3
	Joint venture	1.5
	Government and institutions	1.3

### 3.2. Measures

#### 3.2.1. Instant Messages Sent

We adapted three items from Dabbish and Kraut [35] to measure instant messages sent over half a workday [26]. A sample item is “This morning I took the initiative to send a lot of instant messages using communication tools such as WeChat.” Participants responded on a 5-point Likert scale, which ranged from strongly disagree to strongly agree. The coefficient alpha was 0.982.

#### 3.2.2. Usefulness of Reply

We adapted three items from Dabbish and Kraut [35] and Kato and Kato [36] to measure this contrast. A sample item is “The other side quickly replied to my IM”. Participants responded on a 5-point Likert scale, which ranged from strongly disagree to strongly agree. The coefficient alpha was 0.938.

#### 3.2.3. Perceived Work Goal Progress

We measured daily perceived work goal progress by adapting 3-items from Koopman, Lanaj, and Scott [37]. A sample item is “I have made good progress on my work goals.” Participants responded on a 5-point Likert scale, which ranged from strongly disagree to strongly agree. The coefficient alpha was 0.936.

#### 3.2.4. Helping

Adapted from the 3-item scale compiled by Farh, Earley and Lin [38]. A sample item is “I help colleagues solve the work-related problem”. Participants responded on a 5-point Likert scale, which ranged from strongly disagree to strongly agree. The coefficient alpha was 0.982.

## 4. Data Analysis and Results

### 4.1. Common Method Variance

Since all variables were measured by the same respondents, we used Harman’s one-factor analysis to test common method variance (CMV) [39–41]. The variance explained by

the single factor of factor analysis was 44.58%, which was less than 50%. Therefore, CMV was acceptable.

#### 4.2. Confirmatory Factor Analysis

We conducted a set of CFAs to assess discriminant validity. CFA results showed that the four-factor model (instant messages sent, the usefulness of reply, perceived work goal progress and helping) explained the data better ( $X^2/df = 2.35$ , TLI = 0.98, CFI = 0.90, RMSEA = 0.06); than other latent-variable models (Three-factor model<sup>1</sup>(combining perceived work goal progress and helping):  $X^2/df = 35.24$ , TLI = 0.76, CFI = 0.73, RMSEA = 0.29; three-factor model<sup>2</sup>(combining instant messages sent and the usefulness of reply):  $X^2/df = 25.19$ , TLI = 0.76, CFI = 0.81, RMSEA = 0.26; Two-factor model (combining instant messages sent and the usefulness of reply, combining perceived work goal progress and helping):  $X^2/df = 55.94$ , TLI = 0.45, CFI = 0.56, RMSEA = 0.37; One-factor model:  $X^2/df = 80.99$ , TLI = 0.20, CFI = 0.44, RMSEA = 0.45).

#### 4.3. Descriptive Data Analysis

Table 2 reports the means, standard deviations, and a correlation matrix showing Pearson's correlation coefficients for all constructs. We found that instant messages sent was significantly positively correlated with perceived goal progress ( $r = 0.169$ ,  $p < 0.01$ ). We observed a significant positive correlation between perceived goal progress and helping ( $r = 0.495$ ,  $p < 0.01$ ). Through an in-depth exploration of related relationships, we laid the foundation for further regression analysis.

**Table 2.** Descriptive statistics, correlation matrix and discriminant validity.

Variable	M	SD	AVE	1	2	3	4
SEND	2.774	0.928	0.903	<b>0.982</b>			
GPrg	3.602	0.654	0.754	0.169 **	<b>0.936</b>		
UR	3.509	0.670	0.775	0.463 **	0.345 **	<b>0.938</b>	
Help	3.967	0.544	0.865	0.079	0.495 **	0.288 **	<b>0.982</b>

Note: M, mean; N = 398; \*\*  $p < 0.01$ . The diagonal bold numbers are Cronbach  $\alpha$ . SEND = instant messages sent; UR = usefulness of reply; GPrg = perceived goal progress; Help = helping.

#### 4.4. Results of Hypothesis Testing

The results of regression analysis (Table 3) show that instant messages sent has a significant positive effect on perceived goal progress ( $\beta = 0.119$ ,  $p < 0.05$ ), which supports Hypothesis 1. Perceived goal progress also has a significant positive effect on helping ( $\beta = 0.411$ ,  $p < 0.01$ ).

**Table 3.** Regression analysis.

	Dependent Variable					
	Perceived Goal Progress			Help		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Intercept	3.273 **	2.417 **	2.312 **	3.838 **	2.486 **	2.490 **
SEND	0.119 *	0.008	−0.023	0.046		−0.003
UR		0.331 **	0.375 **			
Int			0.125 *			
GPrg					0.411 **	0.412 **
R <sup>2</sup>	0.028	0.118	0.139	0.006	0.245	0.245
$\Delta R^2$		0.091 **	0.021 *			0.241 **

Note: N = 398; \*\*  $p < 0.01$ , \*  $p < 0.05$ . Int =  $(SEND - MEAN_{SEND}) \times (UR - MEAN_{UR})$ . SEND = instant messages sent; UR = usefulness of reply; GPrg = perceived goal progress; Help = helping.

To test the mediation effect of Hypothesis 2, we use the SPSS Hayes Process by bootstrap procedure with 5000, samples. The principle of this method is to estimate the

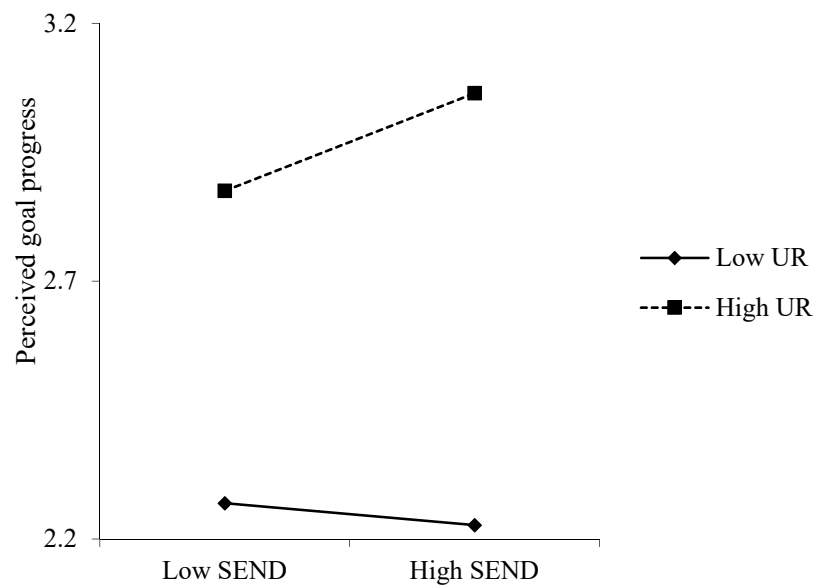
95% confidence interval of the effect value. If the confidence interval includes 0, the effect is not significant, otherwise, the effect is significant. The results of Model 4 (Table 4) from the Model Templates for PROCESS in SPSS25.0 showed that the indirect effect of instant messages sent on helping through perceived goal progress was significant (estimate = 0.049,  $CI_{95\%} = [0.014, 0.092]$ ; the confidence interval does not contain 0), which supports Hypothesis 2.

**Table 4.** Mediation effect in Model 4 from the Model Templates for PROCESS.

Path: SEND->GPrg->Help				95%CI	
Total effect	se	t	p	LLCI	ULCI
0.046	0.029	1.582	0.115	-0.011	0.104
Direct effect					
-0.003	0.026	-0.097	0.923	-0.054	0.049
Indirect effect	BootSE			BootLLCI	BootULCI
0.048	0.020			0.014	0.092

Note: N = 398; SEND = instant messages sent volume; GPrg = perceived goal progress; Help = helping.

Given the mediating effect of perceived goal progress in the relationship between instant messages sent and helping, we examined whether the usefulness of reply moderated the effects of instant messages sent on perceived goal progress. The results of Model 3 in Table 2 showed the instant messages sent  $\times$  usefulness of reply interaction significantly predicted perceived goal progress ( $\beta = 0.125, p < 0.01$ ). Figure 2 depicted the interaction on perceived goal progress.



**Figure 2.** Interaction of instant messages sent and usefulness of reply predicting goal progress. Note: SEND = instant messages sent; UR = usefulness of reply.

When examining a moderated mediation model in Hypothesis 3, we used Mplus 7.0 to test the difference effect between high-level usefulness of reply (Mean + 1SD) and low-level usefulness of reply (Mean - 1SD). The results also showed that perceived goal progress significantly predicted helping (estimate = 0.412,  $CI_{95\%} = [0.317, 0.513]$ ) and the instant messages sent  $\times$  usefulness of reply interaction significantly predicted perceived goal progress (estimate = 0.125,  $CI_{95\%} = [0.003, 0.219]$ ). And in Table 5, we could see that the difference slope (the influence of usefulness of reply on the relationship between instant messages sent and perceived goal progress) between high-level usefulness of reply and low-level usefulness of reply was significant (estimate = 0.167,  $CI_{95\%} = [0.005, 0.294]$ ), which further supported that usefulness of reply moderated the positive relationship between

instant messages sent and perceived goal progress. To test the moderated mediation effect, results showed that the difference indirect effect (instant messages sent influences helping through perceived goal progress) between high-level usefulness of reply and low-level usefulness of reply was also significant (estimate = 0.069,  $CI_{95\%} = [0.007, 0.124]$ ). So, Hypothesis 3 was supported.

**Table 5.** Results of First stage moderated mediation in Mplus 7.0.

	Estimate	S.E.	<i>p</i>	$CI_{95\%}$	
				Lower 2.5%	Upper 2.5%
Slope					
Mean + 1SD	0.061	0.044	0.162	−0.032	0.142
Mean − 1SD	−0.106	0.066	0.105	−0.226	0.034
Difference	0.167	0.074	0.023	0.005	0.294
Direct effect					
Mean + 1SD	0.411	0.081	0.000	0.254	0.581
Mean − 1SD	−0.416	0.079	0.000	−0.582	−0.273
Difference	0.826	0.150	0.000	0.555	1.152
Indirect effect					
Mean + 1SD	0.025	0.018	0.159	−0.013	0.059
Mean − 1SD	−0.044	0.027	0.101	−0.094	0.013
Difference	0.069	0.029	0.019	0.007	0.124
Total effect					
Mean + 1SD	0.436	0.083	0.000	0.280	0.608
Mean − 1SD	−0.459	0.082	0.000	−0.632	−0.309
Difference	0.895	0.152	0.000	0.619	1.219

## 5. Discussion

As a kind of parts of daily work, how sending and receiving instant messages influence our work has been a hot topic that got a lot of attention [42]. Yet, receiving is mainstream in this area. We start from the perspective of senders, after we sent messages, what would happen? Based on the Conservation of Resource Theory, we found that: (a) Instant messages sent is positively associated with perceived work goal progress; (b) Instant messages sent has an indirect effect on helping via perceived work goal progress; (c) The mediating effect of perceived work goal progress on the relationship between instant messages sent and helping will be moderated by the usefulness of reply. This might be quite an interesting conclusion: sending more instant messages increases the perception of goal progress, which then people are willing to offer help, and the usefulness of replies received will moderate the process when usefulness is high, the effect is stronger.

### 5.1. Theoretical and Practical Contributions

There are several important theoretical implications of our findings.

Firstly, our research creatively took the point of the instant message sender. There is a lot of research on instant messaging, but they are overemphasized the recipient of the message, and little is known about the party who initiated the message in the organization. Thus, whereas prior research has focused on the message-recipient, we initiate a shift in this line of work to the message-sender. This is important because instant messaging is an interactive process that involves two parties. Everyone not only passively accepts instant messages, but also actively sends messages. To date, research on instant messaging has largely ignored the sender. Different from the interruption of receiving instant messages, actively sending instant messages often means requesting others to provide resources for senders and improving their perception of work control. This usually means that one's resources have been supplemented. Therefore, the first contribution of this study is to expand the literature on instant messaging.

Second, our study builds a framework to explain how instant messages brings sustainable interpersonal relationship. Based on the conservation of resource theory, we argue



that initiating instant messages is a proactive behavior, senders may have a sense of control. Thus, they are more likely to feel capable and perceiving goal progress. What's more, the useful reply messages carrying with information, feedback, suggestions, and emotional support, which then add resources for senders, enabling them to give positive actions like helping others. We believe this is an interesting story for interpreting instant messaging. How do real-time communication affect employees out of the communication, our study opened a window for this such attractive topic.

Moreover, we focus on short-term or more immediate consequences of instant messages, as instant messages fluctuate daily in the organization. Previous studies usually considered the overall effects of instant messaging, which omitted its daily influence. We believe this instant communication way will have some interesting immediate consequences. It turns out message senders would feel goal progress and do some helping behaviors to respond for the rest of the time within the day. Our study explores how instant messages influence the work in the specific process in a short period time.

Finally, we draw conservation of resource theory, arguing that starting a conversation by instant messaging can be a resource acquisition behavior. This is very much meaningful. A conservative approach may reduce the loss of resources, but proactive behavior is more likely to help you get new resources. When you initiate something, you may feel positive emotions and feel in control of how things are going. Our research applies COR to the field of instant communication, which increases the strength of its theoretical explanation, and provides an empirical exploration of how resources are obtained and maintained in the real-time interactive process.

Besides the theoretical contributions, our study also presents some important practical implications for organizations. First of all, our research reveals that managers should make policies for using instant messaging. Results found the instant messages sent by employees and the quality of responses will significantly affect employees' perceived goal progress and subsequent helping behavior. That is to say, sending instant messages to seek help and support will make employees more willing to help other colleagues in the future. The organization should cultivate good instant messaging use habits, encourage employees to interact with each other, and learn from each other [43].

### *5.2. Limitations and Suggestions for Future Research*

The contributions of this research should be considered in light of its limitations.

The first limitation of our study is that all our variables were self-reported, which may raise concerns about common method variance. We took several steps to diminish these concerns. First of all, we temporally separated the predictor and criterion measures, which mitigates concerns about transient factors influencing responses. And then, our moderator effect is the usefulness of reply, which is not spuriously owing to common method variance [44]. Nonetheless, we invite future scholars to address potential threats to validity posed by common method bias, by peer assessments from other sources, or using objective measures.

Second, we examined the moderating effects of the usefulness of reply, capturing the influences of the usefulness of reply on the relationship of instant messages with its consequences. In addition to the usefulness of reply, future research could take into account other personal traits, such as time management trends or self-control. For example, employees who are better at time management and self-control may be less susceptible to the negative impact of instant messages overloaded [10].

Another limitation is that we just frame how instant messages sent effect the workplace. However, we all have a deep understanding of being surrounded by instant messages all the time. So, will this affect spillover from the workplace to the family? We believe that this is a very interesting and meaningful topic, and we encourage future researchers can pay attention to it.

Finally, it is no doubt that instant communication is a bi-directional process, although we have taken the usefulness of reply as a moderator, there should be more emphasis on

it. When the sender initiates a conversation, if the receiver replies immediately, how the text is organized, and which information forms are used, and so on, all could be boundary conditions of instant messaging . . . Moreover, cultural issues can also be interesting factors that play a role. Multiple topics on the agenda can be addressed for future research.

## 6. Conclusions

Instant messages are the daily company to everyone in the “internet time”. We are changed unintentionally by the rapid development of communication technology, in life or at work. The convenient instant messaging has made a total revolution to the past asynchronous communication in some way, to bring us the convenience of near-synchronous real-time contact. However, people gradually began to be troubled by the information explosion. Scholars hold different views on the changes brought about by instant messaging. Our research shows that the employees who send instant messages can obtain a feeling of goal progress, which mediates the helping behaviors. That is to say, we take the initiative to send instant messages and obtain the effectiveness of the response from the other party as additional resources (time, knowledge, skills or support, etc.) to increase future resource investment behavior (helping). Instant messaging brings a virtuous sustainable circle of interpersonal interaction. In consideration of another side, the receiver’s reply does influence the senders’ follow-up reactions. Senders who get useful feedback would be more perceiving goal progress, and invest more to pursue more resources. In future research, we can further explore the two-way communication process of instant messaging.

**Author Contributions:** Conceptualization, X.J. and J.D.; Data curation, X.J.; Formal analysis, X.J., J.Z.; Investigation, X.J. and J.D.; Supervision, X.J.; Writing—original draft, X.J.; Writing—review & editing, X.J., J.D., J.Z. and T.Y. All authors have read and agreed to the published version of the manuscript.

**Funding:** This research received no external funding.

**Institutional Review Board Statement:** The study was conducted according to the guidelines of the Declaration of Helsinki, and following the academic ethics.

**Informed Consent Statement:** Informed consent was obtained from all subjects involved in the study.

**Data Availability Statement:** The data presented in this study are available on request from the corresponding author. The data are not publicly available due to that we have promised participants that we would not disclose the data unless necessary.

**Acknowledgments:** We would like to thank all data providers and friends for their kindly help.

**Conflicts of Interest:** The authors declare no conflict of interest.

## References

1. Sun, Z.; Lin, C.H.; Wu, M.; Zhou, J.; Luo, L. A tale of two communication tools: Discussion-forum and mobile instant-messaging apps in collaborative learning. *Br. J. Educ. Technol.* **2018**, *49*, 248–261. [[CrossRef](#)]
2. Ou, C.X.J.; Davison, R.M. Shaping guanxi networks at work through instant messaging. *J. Assoc. Inf. Sci. Technol.* **2016**, *67*, 1153–1168. [[CrossRef](#)]
3. Huang, L.V.; Zhang, K. Engagement, Formality, and Visibility: Managing Paradoxes of Using Mobile Instant Messaging for Work. *Int. J. Commun.* **2019**, *13*, 1919–1938.
4. Cui, D. Beyond “connected presence”: Multimedia mobile instant messaging in close relationship management. *Mob. Media Commun.* **2016**, *4*, 19–36. [[CrossRef](#)]
5. Darics, E. The Blurring Boundaries Between Synchronicity and Asynchronicity. *Int. J. Bus. Commun.* **2014**, *51*, 337–358. [[CrossRef](#)]
6. Yuan, C.-H.; Wu, Y.J. Mobile instant messaging or face-to-face? Group interactions in cooperative simulations. *Comput. Hum. Behav.* **2020**, *113*, 106508. [[CrossRef](#)]
7. Cho, J.; Lee, H.E.; Kim, H. Effects of Communication-Oriented Overload in Mobile Instant Messaging on Role Stressors, Burnout, and Turnover Intention in the Workplace. *Int. J. Commun.* **2019**, *13*, 1743–1763.
8. Sheer, V.C.; Rice, R.E. Mobile instant messaging use and social capital: Direct and indirect associations with employee outcomes. *Inf. Manag.* **2017**, *54*, 90–102. [[CrossRef](#)]
9. McGowan, M.L.; Lin, A.; Ou-Yang, R.; Zei, M.; Grobman, W. Concentration and the Second Stage of Labor: Outcomes Associated with the Interactive Metronome. *Am. J. Perinatol.* **2012**, *29*, 823–826. [[CrossRef](#)]

10. Rosen, C.C.; Simon, L.S.; Gajendran, R.S.; Johnson, R.E.; Lee, H.W.; Lin, S.J. Boxed in by your inbox: Implications of daily e-mail demands for managers' leadership behaviors. *J. Appl. Psychol.* **2019**, *104*, 19–33. [[CrossRef](#)]
11. Mazmanian, M.; Orlikowski, W.J.; Yates, J. The Autonomy Paradox: The Implications of Mobile Email Devices for Knowledge Professionals. *Organ. Sci.* **2013**, *24*, 1337–1357. [[CrossRef](#)]
12. Dahya, N.; Dryden-Peterson, S.; Douhaibi, D.; Arvisais, O. Social support networks, instant messaging, and gender equity in refugee education. *Inf. Commun. Soc.* **2019**, *22*, 774–790. [[CrossRef](#)]
13. Gabriel, A.S.; Koopman, J.; Rosen, C.C.; Johnson, R.E. Helping others or helping oneself? An episodic examination of the behavioral consequences of helping at work. *Pers. Psychol.* **2018**, *71*, 85–107. [[CrossRef](#)]
14. Lanaj, K.; Johnson, R.E.; Barnes, C.M. Beginning the workday yet already depleted? Consequences of late-night smartphone use and sleep. *Organ. Behav. Hum. Decis. Process.* **2014**, *124*, 11–23. [[CrossRef](#)]
15. Lanaj, K.; Johnson, R.E.; Wang, M. When lending a hand depletes the will: The daily costs and benefits of helping. *J. Appl. Psychol.* **2016**, *101*, 1097–1110. [[CrossRef](#)]
16. Trougakos, J.P.; Beal, D.J.; Cheng, B.H.; Hideg, I.; Zweig, D. Too drained to help: A resource depletion perspective on daily interpersonal citizenship behaviors. *J. Appl. Psychol.* **2015**, *100*, 227–236. [[CrossRef](#)]
17. Glomb, T.M.; Bhawe, D.P.; Miner, A.G.; Wall, M. Doing Good, Feeling Good: Examining the Role of Organizational Citizenship Behaviors in Changing Mood. *Pers. Psychol.* **2011**, *64*, 191–223. [[CrossRef](#)]
18. Bolino, M.C.; Turnley, W.H.; Bloodgood, J.M. Citizenship behavior and the creation of social capital in organizations. *Acad. Manag. Rev.* **2002**, *27*, 505–522. [[CrossRef](#)]
19. Thompson, P.S.; Bolino, M.C. Negative beliefs about accepting coworker help: Implications for employee attitudes, job performance, and reputation. *J. Appl. Psychol.* **2018**, *103*, 842–866. [[CrossRef](#)]
20. Hobfoll, S.E. Conservation of Resources—A New Attempt at Conceptualizing Stress. *Am. Psychol.* **1989**, *44*, 513–524. [[CrossRef](#)]
21. Hobfoll, S.E. Stress, culture, and community: The psychology and philosophy of stress. *Br. J. Med. Psychol.* **1998**, *44*, 408–409.
22. Hobfoll, S.E. The Influence of Culture, Community, and the Nested-Self in the Stress Process: Advancing Conservation of Resources Theory. *Appl. Psychol.* **2001**, *50*, 337–421. [[CrossRef](#)]
23. Davison, R.M.; Ou CX, J.; Martinsons, M.G.; Zhao, A.Y.; Du, R. The communicative ecology of Web 2.0 at work: Social networking in the workspace. *J. Assoc. Inf. Sci. Technol.* **2014**, *65*, 2035–2047. [[CrossRef](#)]
24. David, D.; Dawley, W.P. Anthony. User Perceptions of E-Mail at Work. *J. Bus. Tech. Commun.* **2003**, *17*, 170–200.
25. Barley, S.R.; Meyerson, D.E.; Grodal, S. E-mail as a Source and Symbol of Stress. *Organ. Sci.* **2011**, *22*, 887–906. [[CrossRef](#)]
26. Jerejian AC, M.; Reid, C.; Rees, C.S. The contribution of email volume, email management strategies and propensity to worry in predicting email stress among academics. *Comput. Hum. Behav.* **2013**, *29*, 991–996. [[CrossRef](#)]
27. Qin, X.; Huang, M.; Johnson, R.E.; Hu, Q.; Ju, D. The Short-lived Benefits of Abusive Supervisory Behavior for Actors: An Investigation of Recovery and Work Engagement. *Acad. Manag. J.* **2018**, *61*, 1951–1975. [[CrossRef](#)]
28. Halbesleben JR, B.; Bowler, W.M. Emotional exhaustion and job performance: The mediating role of motivation. *J. Appl. Psychol.* **2007**, *92*, 93–106. [[CrossRef](#)]
29. Halbesleben, J.R.B.; Wheeler, A.R. To Invest or Not? The Role of Coworker Support and Trust in Daily Reciprocal Gain Spirals of Helping Behavior. *J. Manag.* **2015**, *41*, 1628–1650. [[CrossRef](#)]
30. Moore, E.; Holding, A.C.; Moore, A.; Levine, S.L.; Powers, T.A.; Zuroff, D.C.; Koestner, R. The role of goal-related autonomy: A self-determination theory analysis of perfectionism, poor goal progress, and depressive symptoms. *J. Couns. Psychol.* **2020**. [[CrossRef](#)]
31. De Clercq, D.; Rahman, Z.; Haq, I.U. Explaining Helping Behavior in the Workplace: The Interactive Effect of Family-to-Work Conflict and Islamic Work Ethic. *J. Bus. Ethics* **2017**, *155*, 1167–1177. [[CrossRef](#)]
32. Deckop, J.R.; Cirka, C.C.; Andersson, L.M. Doing unto others: The reciprocity of helping behavior in organizations. *J. Bus. Ethics.* **2003**, *47*, 101–113. [[CrossRef](#)]
33. Liang, H.Y.; Shih, H.A.; Chiang, Y.H. Team diversity and team helping behavior: The mediating roles of team cooperation and team cohesion. *Eur. Manag. J.* **2015**, *33*, 48–59. [[CrossRef](#)]
34. Gorgievski, M.J.; Halbesleben, J.R.B.; Bakker, A.B. Expanding the boundaries of psychological resource theories. *J. Occup. Organ. Psychol.* **2011**, *84*, 1–7. [[CrossRef](#)]
35. Dabbish, L.A.; Kraut, R.E. Email overload at work: An analysis of factors associated with email strain. *IEEE Eng. Manag. Rev.* **2010**, *38*, 76–90.
36. Kato, Y.; Kato, S. Reply speed to mobile text messages among Japanese college students: When a quick reply is preferred and a late reply is acceptable. *Comput. Hum. Behav.* **2015**, *44*, 209–219. [[CrossRef](#)]
37. Koopman, J.; Lanaj, K.; Scott, B.A. Integrating the Bright And Dark Sides of Ocb: A Daily Investigation of the Benefits and Costs of Helping Others. *Acad. Manag. J.* **2016**, *59*, 414–435. [[CrossRef](#)]
38. Farh, J.L.; Earley, P.C.; Lin, S.C. Impetus for action: A cultural analysis of justice and organizational citizenship behavior in Chinese society. *Adm. Sci. Q.* **1997**, *42*, 421–444. [[CrossRef](#)]
39. Eby, L.T.; Dobbins, G.H. Collectivistic orientation in teams: An individual and group-level analysis. *J. Organ. Behav.* **1997**, *18*, 275–295. [[CrossRef](#)]
40. Livingstone, L.P.; Nelson, D.L.; Barr, S.H. Person–environment fit and creativity: An examination of supply–value and demand–ability versions of fit. *J. Manag.* **1997**, *23*, 119–146. [[CrossRef](#)]

41. Podsakoff, P.M.; MacKenzie, S.B.; Lee, J.-Y.; Podsakoff, N.P. Common method biases in behavioral research: A critical review of the literature and recommended remedies. *J. Appl. Psychol.* **2003**, *88*, 879–903. [[CrossRef](#)] [[PubMed](#)]
42. Seung Yeop, L.; Sang Woo, L. Social Media Use and Job Performance in the Workplace: The Effects of Facebook and KakaoTalk Use on Job Performance in South Korea. *Sustainability* **2020**, *12*, 4052.
43. Pimmer, C.; Bruhlmann, F.; Odetola, T.D.; Dipeolu, O.; Grohbiel, U.; Ajuwon, A.J. Instant messaging and nursing students' clinical learning experience. *Nurse Educ. Today* **2018**, *64*, 119–124. [[CrossRef](#)] [[PubMed](#)]
44. Siemen, E.; Roth, A.; Oliveira, P. Common method bias in regression models with linear, quadratic, and interaction effects. *Organ. Res. Methods* **2010**, *13*, 456–476. [[CrossRef](#)]