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Migrant Parenting and Mobile Phone Use: Building Quality Relationships between Chinese Migrant Workers and their Left-behind Children

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Abstract This study examines the uses and derived gratifications of mobile phones among migrant parents in communicating with children they left behind. Data were gathered from a sample of 378 migrant parents who worked in factories in southern China. The results show that migrant workers who used mobile phones to assist in distance parenting were motivated by a desire for instantaneous communication (e.g., immediate access and reassurance), online transactions, affection, mobility, relaxation, and information. The demographic results show that the migrant workers tended to communicate with their older male children via calls and text messaging with their female children via audiovisual interaction. When migrant parents called, texted, or interacted with their children via audiovisual functions, they were motivated by the need for affection and relaxation. In predicting the quality of migrant workers' involvement in parenting, the current study found that significant motives for the use of mobile phones included their ability to care for the children they left behind through communicating instantaneously, expressing affection, and conducting online transactions. The current paper discusses the theoretical and practical implications of the results of this study.

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Introduction

In recent years, there has been an influx of migrant workers into the first-tier cities of the Chinese mainland and Hong Kong. The children they have had to leave behind have attracted increasing public attention; however, in-depth studies of the pattern of communication between these trans-regional parents and their children are still limited. These left-behind children face the absence of stay-at-home parents, which could lead to declining school performance, communication disorders, and other psychological problems. Similarly, trans-regional parents face the challenge of providing family education in an effective and timely way as well as the potential risks of distance parenting. According to governmental figures, China's floating population was more than 277 million by the end of 2015, which has made migrant workers an important social group (*China National Bureau of Statistics* 2016). The physical absence of migrant workers from their families creates a separation between the material benefits of urban employment and the maternal and/or paternal supervision of their children (Chib 2014). Escobar (2010) defined the term "broken home" as a transnational family that is disrupted because of economic duress and opportunity; this definition seems to apply to some migrant workers and their families in China. The results of a poll conducted in 1999 by the National Center for Fathering in the United States indicated that both fatherlessness and maternal absence could lead to significant social problems because fatherhood and motherhood are extremely important factors in shaping and maintaining profoundly meaningful connections and emotions between parents and children (Arendell 2000).

In China, people have experienced significant growth in the use of mobile phones and networks, which are becoming the dominant medium of communication. Statistics from the Ministry of Industry and Information Technology (MIIT) showed that by 2015, China had more than 1.3 billion mobile phone users and the world's largest online population, with an estimated 688 million users (MIIT 2015).

Because of the rapid development of technology, the mobile phone is no longer a device used only for voice communication between two individuals. The mobile phone has become a hybrid device that integrates the communication of audio, video, and textual information. Indeed, studies have shown that mobile phones,[1] particularly smartphones, are being increasingly used for multitasking purposes, such as sending messages, taking pictures, downloading information, browsing the Internet, and checking social networking websites. People often access these functions while they are on the move (Brenner 2013).

In recent years, without the need for local involvement, social ties established through mobile devices have become more flexible, breaking the boundaries of time and space (Castells 2000). Mobile communication has played an important and unique role in this trend because the mobile phone facilitates connections with network ties regardless of time and space (Wellman 2002). However, any assertion regarding the power of mobile phones to enable migrant groups to communicate with the children they left behind is premature because findings pertaining to how, for what purposes, and at what cost the phones are used remain unclear (Qiu 2014). Therefore, the goals of this study are to investigate the role of

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[1] As the concept of "mobile phone" is broader than that of "smartphone," and some migrant workers in the study used smartphones while their left-behind children in rural areas may have used non-smartphones, this paper uses the generic term "mobile phone" to include those who used smartphones.

mobile phones in influencing the quality of parent-child relationships and the ways in which migrant parents use the device for distance parenting.

This study concerns the usage patterns and derived gratifications of mobile phones among Chinese trans-regional migrant parents in communicating with children they had to leave behind in rural areas. Madianou and Miller (2011) examined the influence of mobile communication between transnational mothers and their children and pointed out that mobile communication is one of the crucial ways of mitigating the problems of family separation. However, these authors only targeted females and children who were over 17 years of age. The current study has extended the scope and assessed trans-regional family relationships that include fathers, mothers, and their left-behind children. Moreover, this study targeted migrant parents with young children ranging in age from 3 to 17 years. The researchers believe that children in this age range are most in need of parenting and guidance. According to estimations, there are approximately 100 million children from migrant families in China, including more than 60 million children left behind in rural villages and more than 36 million children who have been moved to urban areas but may still be separated from their parents (Feng 2016). By analyzing Chinese migrant workers' mobile phone usage patterns in communicating with their young left-behind children, this study has filled the research gap between the examination of parent-child relationships in China and the exploration of Chinese migrant workers' gratifications derived from mobile phone use. Although it is apparent that uses and gratifications (U&G) theory has specific relevance to mobile phone studies (Leung and Wei 2000), this theory has not been given prominence in migration literature. Therefore, this paper seeks to apply U&G theory to increase understanding of why and how migrant workers use mobile phones to build and maintain family relationships with their left-behind children.

Literature Review

Mobile Phone Usage

The mobile phone has been defined as one of the greatest domestic appliances ever invented (Coghill 2001). Among various contemporary mobile communication technologies, the mobile phone presents the greatest options for interpersonal communication. Even when traditional means of human communication are available, the mobile phone has undoubtedly become the top wireless media carrier used throughout China (Li 2009). Previous research proposed that the adoption of the mobile phone was no longer a status symbol (Blinkoff 2001). Instead, the mobile phone is currently being used to facilitate daily life; this phenomenon will evolve to become a mobile lifestyle.

Because mobile communication is similar to face-to-face communication, mobile communication can replace physical communication. Chan (2013) noted that synchronous voice communication can substitute as a form of interpersonal communication when the interlocutors are in different physical locations. Li (2009) posited several reasons to explain why users like to use mobile phones, including convenience, mobility, safety, and networking. By using mobile phones, people are readily available to others, which potentially induces a sense of belonging and constancy (Leung and Wei 2000; Spagnolli and Gamberini 2007). People enjoy using mobile phones to communicate with family members, especially orally,

because with voice contact, they have a greater capacity to articulate personal emotions and genuinely show affection and emotional support than with e-mail or text messages (Sawhney and Gomes 2000). The information contained in, and delivered by, the mobile phone can induce high emotions in users, and people use the device to keep in touch more frequently than before the era of the mobile phone (Vincent 2005).

This technical tool for communication is changing not only society's capacity to access information, but also how people live (Fortunati 2002). Before the explosion in mobile phone usage, synchronous voice communication between parents and their left-behind children was uncommon and expensive. Richtel (2009) noted that due to the mobile phone, people are available 24 h per day, 7 days per week, without geographical boundaries. Li (2009) also emphasized that because of the portability and convenience of the mobile phone, users can access their device at any time and in any place. In addition, the mobile phone has become a widely used communication tool for all age groups, including older generations who have found that such communication devices are useful in emergencies and help them connect with their families and friends.

Text Messaging

While mobile phones are playing an increasingly important role in people's daily lives, voice-to-voice conversations through these devices are taking place less frequently, and communication through text messaging is becoming predominant (Richtel 2009). Several years ago in Japan, a significant change occurred in people's communication patterns from personal computer-based communication to mobile phone communication, especially text messaging (Ministry of Internal Affairs and Communications 2007). Japanese adolescents prefer text messages (including SMS and e-mails via mobile phones) to telephone conversations because texts are indirect and inexpensive and provide asynchronous communication (Igarashi et al. 2005a, 2005b).

According to Madell and Muncer (2007), text messaging is used for several reasons, including the ability to control how the user interacts with others and the length of conversations. The researchers pointed out that online communication and text messaging give the user added control over messages because users have the ability and the time to think about how to articulate what they want to say (Madell and Muncer 2007). Kim et al. (2007) identified that text messaging is often used as a social communication tool for building new relationships, bonding closely with families and friends, and reinforcing a sense of connection with peers.

Mobile Parenting

Social science research has long explored the relationships between specific parental control and its practical outcomes for children (Leung and Lee 2012; Maccoby and Martin 1983). Parenting styles concern the emotional sphere of the parent-child relationship as well as parental feelings about, and attitudes toward, the child (Grusec 2002). According to Darling (1999), "Parenting is a complex activity that includes many specific behaviors that work individually and together to influence child outcomes" (p. 2). In parenting, parents need to control their children by some means of involvement and strictness. Moreover, different amounts of involvement and strictness can lead to various results (Leung and Lee 2012; Eastin et al. 2006).

To track their children, many parents equip their children with mobile phones (Fresnoza-Flot 2009). Kopomaa (2000) pointed out that parents buy children mobile phones to monitor and reassure their children no matter where the children are or what they are doing. Mobile phones enable parents to keep their children safe (Leung and Wei 2000). In addition, mobile phones enable parenting to be flexible because they loosen the duties of setting boundaries for children (Chen and Katz 2008). Fresnoza-Flot (2009) also found that the mobile phone was the preferred means of transnational communication for migrant parents: all the migrants and their family members in this researcher's study possessed mobile phones. The migrants also sent a monthly remittance to their children, which included payment for mobile phone usage.

Ling (2004) found that mobile phones provide parents, children, and their friends with a direct and private communication channel. De Vries (2005) argued that even though mobile phones were originally created for professional or business purposes, the devices are widely used to maintain family connections and communication among friends. Ling (2004) added that the mobile phone allows parents and children to stay connected during periods of spatial distance from each other. Fresnoza-Flot (2009) found that most of the topics discussed by parents and their children involved family projects, educational performance, well-being, and important events within the community and the family circle. Geser (2005) noted that the mobile phone could not only help migrant users fill time gaps and deal with loneliness, but also maintain family ties.

Uses and Gratifications

Uses and Gratifications theory focuses on what people do with media, which is significantly different from other media-effect theories that focus on what media do to people (Katz 1959). U&G theory discusses how users deliberately seek out media that will satisfy their specific social and psychological needs and allow them to enhance knowledge, social interactions, relaxation, diversion, and escape (Tankard 2000). U&G theorists are mainly concerned about the ways in which individuals mold media content to gratify needs (Ball-Rokeach 1998). Ruggiero (2000) observed that because people have an increasing number of choices in technology usage, motivation and satisfaction become crucial components of audience analysis.

To investigate the uses and gratifications (U&G) of the mobile phone, Leung and Wei (2000) identified six primary motivations during the period when the mobile phone was beginning to become popular. The U&G included affection, entertainment, instrumentality, reassurance, fashion, and mobility. Chigona et al. (2008) noted that the gratifications of mobile phone usage include financial incentives, parental control, information access, and immediacy. Tamminen et al. (2004) identified three motivational needs for using mobile phones, including social needs, navigation needs, and personal needs. Aoki and Downes (2003) found several motivations for people's mobile phone usage, including personal safety, financial incentive, information access, social interaction, and time management. Vincent (2005) highlighted emotional attachments to the use of mobile phones; for example, people continue to use mobile phones because of the feeling of "being cool" and the desire not to be left out by their social groups.

Keller (1997) distinguished two broad gratifications of telephone use: intrinsic and instrumental. Intrinsic motivations for telephone use are socializing, such as chatting, gossiping, and contacting family members, and experiencing a sense of security, whereas

instrumental gratifications include specific concerns about the utility of the phone (Leung and Wei 2000). Following this line of research, one aim of the current study is to determine distinctive gratifications of mobile phone use, particularly for migrant workers in southern China. To comprehensively discover the gratifications Chinese migrant workers seek by using mobile phones to communicate with their left-behind children, the researchers included all gratification factors from the above-mentioned gratification models, examined these factors, and ultimately differentiated the specific gratifications that migrant workers seek from mobile phones, especially during long-distance parenting. Thus, the following research question (RQ) and hypothesis (H) were posed:

> RQ_1: What gratifications do Chinese migrant workers seek in the use of mobile phones for distance parenting?
> H_1: The more migrant workers find the use of mobile phones gratifying, the more they will use mobile phones in distance parenting.

Parent-Child Relationship Inventory

A large body of literature examines the quality of family relationships in two primary global domains: positive relationship quality and negative relationship quality (Brendgen et al. 2001). According to Gavin and Furman (1996), positive relationship quality refers to affection, intimacy, support, and nurturance, whereas negative relationship quality refers to conflict, irritation, and antagonism in the relationship. Previous research used these global relationship qualities to examine parent-child relationships (Gavin and Furman 1996; Hansen 2012).

Gerard (1994) proposed the Parent-Child Relationship Inventory (PCRI) to evaluate parental attitudes toward the effects of parenting on their children. The PCRI was used to assess the parents of children between 3 and 15 years of age (Gerard 1994). Instead of replacing qualitative assessments of the parent-child relationship, the PCRI was used to conduct normative comparisons that placed qualitative impressions in perspective (Gerard 1994). Moreover, the PCRI was useful in uncovering latent factors in the problematic parenting of children, from preschoolers to adolescents (Coffman et al. 2006; DeBell 2008).

The PCRI includes seven content sub-scales. Each content sub-scale explores a specific aspect of the parent-child relationship (Gerard 1994). The content sub-scales are as follows:

- Parental Support scale (SUP), which is used to evaluate the level of emotional and social support that parents receive;
- Satisfaction with parenting scale (SAT), which is used to assess the pleasure and fulfillment gained from being a parent;
- Involvement scale (INV), which is used to measure the extent to which parents interact with their children and their knowledge of their children;
- Communication scale (COM), which is used to assess how efficiently parents communicate with their children;
- Limit setting scale (LIM), which is used to measure parents' perceptions of disciplining their children;

- Autonomy scale (AUT), which is used to examine whether parents help their children to be independent; and
- Role Orientation scale (ROL), which is used for the self-assessment of parental attitudes towards gender roles in parenting.

Higher scores in each sub-scale reflect better parent-child relationships, while lower scores indicate greater parenting hardship. A study carried out by Schroeder and Kelly (2010) of 100 parents of children ranging in age from 5 to 12 years revealed that the PCRI is valid, with good internal consistency. Heinze and Grisso (1996) also found that the PCRI is a promising measure because of good internal consistency and temporal stability. Hynan (2013) observed that the PCRI shows no gender differences, which indicates that as a research instrument, its measure of gender equality is adequate. The PCRI has been used in studies concerning children's behavioral problems and autism (Osborne and Reed 2010). In addition, parents with lower scores on the PCRI are more likely to punish their children severely and more inclined to think it is difficult to establish rules regarding their children's behavior (Heinze and Grisso 1996). However, Otto and Edens (2003) found that the PCRI is limited because it lacks correspondence with criteria such as psychosocial or academic functioning.

Only three dimensions of the PCRI—(SAT), (INV), and (COM)—are used in the current study because these sub-scales contain the items most relevant in assessing various aspects of parental attitudes toward distance parenting. The sub-scales (LIM), (AUT), (SUP), and (ROL) were excluded because the original items designed to measure the parent-child relationship may be inappropriate or irrelevant when measuring distance parenting. Therefore, based on the above literature, it is logical to test the effects of the gratifications sought and the frequency of mobile phone use for distance parenting on only three dimensions of the PCRI: SAT, INV, and COM. The following research hypotheses were posed:

H_2: The more migrant workers find the use of mobile phones gratifying, the greater they perceive (a) satisfaction with parenting at a distance, (b) involvement with their left-behind children, and (c) efficient communication with their left-behind children.

H_3: The more frequently migrant workers use their mobile phones for distance parenting, the greater they perceive (a) satisfaction with parenting at a distance, (b) involvement with their left-behind children, and (c) efficient communication with their left-behind children.

In addition to testing these bivariate relationships, the ultimate goals of this study are to determine how demographics and gratifications sought collectively predict the usage patterns of mobile phones for distance parenting and ultimately influence the PCRI. Therefore, the following research questions were posed:

RQ_2: How do Chinese migrant workers' demographics and gratifications sought predict their patterns of mobile phone use in distance parenting?

RQ_3: To what extent can demographics, gratifications sought, and usage patterns of mobile phones for distance parenting predict the PCRI?

Methodology

Sample

As obtaining a probability sample of migrant workers was impossible because these workers are scattered over various economic zones in China, a purposive sample of 378 migrant workers was selected from factories that employ a large number of migrant workers in Shenzhen and Xiamen in southern China. The data for this exploratory study were collected in April 2015, and the workers were from very diverse areas of China, dozens of provinces, and hundreds of cities or villages. After receiving approval from factory officials, the researchers supervised the distribution of survey questionnaires during workers' breaks with the help of personnel managers. The respondents mainly worked in stone factories and shoe, clothing, and mechanical industries. The participants were asked to complete the survey only if they had children who were left behind and if they were required to engage in distance parenting. Moreover, only migrant workers with children ranging from 3 to 17 years were targeted. In the sample, 62.8% of the participants were female migrant workers, 53.0% were 31 to 40 years of age, and 63.9% of the children who reported being left behind were female. However, the children's age distribution was diverse: 25.3% were in the age range of 3 to 5 years, 22.4% were in the age range of 6 to 8 years, 16.6% were in the age range of 9 to 11 years, 15.6% were in the age range of 12 to 14 years, and 20.1% were in the age range of 15 to 17 years. With regard to educational status, 20.3% of the participants had attained a middle school education, 41.4% had a high school diploma, and 29.8% possessed a bachelor's degree. Moreover, 35.1% of the participants reported that they received a monthly salary of US $552 to US $788, and 24.3% reported a salary of US $788 to US $1024.

Measures

Gratifications Initially, this research adopted many motivations and gratifications for the use of mobile phones and conventional telephones from previous studies (Aoki and Downes 2003; Leung and Wei 2000; Chigona et al. 2008; Keller 1997; Madianou and Miller 2011; Tamminen et al. 2004; Vincent 2005). In addition, focus groups were conducted with several migrant parents to understand their motives and patterns of mobile phone usage in contacting their left-behind children. Following the preliminary results, the researchers deleted some motivations that were regarded as irrelevant, such as time management, fashion, and status. A new factor, online transactions, was included based on the results of the focus group interviews. Ultimately, the respondents were asked to respond to 24 items that measured to what extent they agree that specific attributes of mobile phones are important in their daily lives. A four-point Likert scale, in which 1 = strongly disagree and 4 = strongly agree, was used to rate the 24 gratification items (see Table 1 for detail). An exploratory factor analysis was subsequently conducted to identify the gratifications migrant workers sought in the use of their mobile phones in distance parenting.

Mobile Phone Usage Patterns The respondents were asked to indicate their usage of mobile phones for distance parenting on a seven-point Likert scale in which 1 = never and 7 = almost always. Nine items were used to identify three dimensions of mobile phone

Table 1 Factor analysis of gratifications-sought in mobile phone use

As a migrant worker, I use the mobile phone…	Mean	SD	Factors					
			1	2	3	4	5	6
Instantaneous communication (Immediate Access/ Reassurance)								
1. To be always accessible to anyone no matter where you are	3.45	.67	.73					
2. To be available to the ill or aged members of the family	3.51	.59	.69					
3. To feel safe and secure in case of emergency	3.32	.69	.66					
4. To have a sense of security	2.93	.83	.66					
5. To provide immediate access to others	3.47	.69	.64					
6. To change your appointment in short notice	3.08	.83	.59					
7. To tell others you will be late during a traffic jam	3.26	.81	.50					
Online transaction								
8. To pay bills online	2.96	.93		.81				
9. To do online banking	2.94	.88		.68				
10. To do online shopping	2.81	.98		.63				
Affection								
11. To let others know you care for them	3.18	.71			.72			
12. To allow parents to carry out family responsibilities while at work	3.09	.77			.68			
13. To feel closer to your family members	3.25	.78			.64			
14. To being always available to the children	3.31	.71			.56			
Mobility								
15. To eliminate the need for change (coins)	2.87	.94				.86		
16. To eliminate the need to queue up for public phone	2.83	.99				.83		
17. To avoid the need of looking for a fixed public telephone any more	3.02	.95				.83		
Relaxation								
18. To relieve boredom by calling people	2.58	.92					.76	
19. To gossip or to chat	2.38	.94					.72	
20. To enjoy the pleasure of talking to people	2.88	.88					.63	
Information-seeking								
21. To see updates on stocks	2.14	1.07						.42
22. To keep up-to-date with social events	3.18	.79						.75
23. To check news headlines and weather updates	3.27	.73						.67
24. To see traffic updates	2.84	.97						.63
Eigenvalue			8.14	3.10	2.02	1.55	1.30	1.05
Variance explained (%)			31.31	11.92	7.78	5.97	4.99	4.03
Cronbach's alpha			.86	.82	.77	.88	.76	.77

Scale used: 1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree; N = 378

usage patterns: calling, text messaging, and audiovisual interaction. These items were adopted from previous studies (Fresnoza-Flot 2009; Reid and Reid 2007; Richtel 2009; Sawhney and Gomes 2000) and from the focus group conducted in early April of 2015. The results provided a more comprehensive understanding of Chinese trans-regional migrant workers with regard to their mobile phone usage patterns. This was a one-way study, focusing only on migrant workers and not on how left-behind children used their

mobile phone. Table 2 illustrates the means and standard deviations of these items. The first dimension was calling with only one item, which reflected the use of mobile phones by parents for making phone calls to children. The mean score of calling was very high at 5.71 (s.d. = 1.8), which suggests that making phone calls to children is very important for migrant workers in distance parenting. The second dimension, text messaging, was composed of three items that referred to the use of phone text messaging, WeChat text messaging, or QQ text messaging by migrant parents in communicating with their children. As Table 1 shows, the Cronbach's alpha of this dimension was very high at .87. The third dimension, audiovisual interaction, contained five items that referred to the use of the audiovisual functions of mobile phones to maintain and improve the relationship quality between migrant workers and their left-behind children. The Cronbach's alpha was high at .80, indicating high internal consistency among these items. However, the items had low mean scores, which suggests that migrant workers might rely on calling and text messaging to perform their parenting roles as these methods provide direct communication; in contrast, the audiovisual functions of mobile phones might offer only indirect or supplementary communication in distance parenting.

PCRI The original PCRI is a 78-item inventory with seven dimensions used to assess parents' attitudes toward their children and the parent-child relationship (Gerard 1994). In the current study, some items were deleted to improve the focus of the questionnaire; hence, each dimension consisted of 3 to 5 items. The parents responded to the statements using a four-point Likert scale in which 1 = strongly disagree and 4 = strongly agree. Lower scores indicated greater parenting difficulties.

Table 3 shows the means and standard deviations of the 10 items in the three dimensions that were used to assess the migrant workers' attitudes toward the effects of their distance parenting and the parent-child relationship quality. The first sub-scale was involvement, which was used to assess the extent to which the parents interacted with their children and their knowledge of their children. The sub-scale consisted of 3 items; the reliability was

Table 2 Mobile phone usage pattern for distance parenting

How often do you use the following mobile phone functions to help you do parenting from a distance?	Mean	SD	Alpha
Calling	5.71	1.8	--
Text messaging	3.96	2.03	.87
Phone text messaging	4.04	2.21	
WeChat text messaging	4.21	2.35	
QQ text messaging	3.64	2.27	
Audiovisual interaction	3.68	2.03	.80
WeChat audio	3.92	2.31	
WeChat video	3.71	2.23	
QQ video	3.40	2.25	
Phone game	3.10	2.14	
Sharing music	4.02	2.16	

Scale used: 1 = never and 7 = almost always; N = 378

Table 3 PCRI description

How much do you agree with the following statements?	Mean	SD	Alpha
Satisfaction with parenting	3.44	.61	.83
1. I get as much satisfaction from having children as other parents do.	3.36	.49	
2. I get a great deal of satisfaction from having children	3.53	.39	
Involvement	3.08	.70	.67
3. I spend a great deal of time with my child	2.95	.79	
4. I feel very close to my child	3.20	.81	
5. I feel there is a great distance between me and my child (Reverse coded)	3.02	.90	
Communication	3.02	.53	.71
6. My child generally tells me when something is bothering him or her	2.78	.94	
7. If I have to say no to my child, I try to explain why	3.31	.69	
8. I feel that I can talk to my child on his or her level	3.01	.75	
9. My child would say that I am a good listener	2.93	.80	
10When my child has a problem, he or she usually comes to me	3.00	.76	

Scale used: 1 = strongly disagree, 2 = agree, 3 = disagree, and 4 = strongly agree; $N = 378$

marginal, with Cronbach's alpha at .67. The second sub-scale, communication, was composed of five items that referred to how efficiently the parents communicated with their children; the Cronbach's alpha for this sub-scale was acceptable at .71. The last sub-scale was satisfaction with parenting, which was used to assess the pleasure and fulfillment that the parents obtained from being a parent; the Cronbach's alpha for this sub-scale was relatively high at .83. The mean scores for the three items were also high, indicating that most migrant workers were satisfied with being parents.

Demographics The age, gender, and education and income levels of each parent as well as the age and gender of the children were recorded.

Results

Gratifications of Mobile Phone Use

To answer the first research question (i.e., RQ_1), a principal components factor analysis with varimax rotation was conducted to determine the potential groupings of the 24 gratification items in the mobile phone use of the migrant workers. As Table 3 shows, six factors with eigenvalues greater than 1.0 emerged, which explains 66% of the total variance. The first factor, instantaneous communication (or immediate access and reassurance), marks the use of the mobile phone to ensure immediate access by users regardless of time and location. This factor also reflects that the mobile phone was used for security and safety in case of emergency. The internal consistency among the items underlying this factor was very high, as indicated by the Cronbach's alpha at .86, and the item means also had relatively high scores. These results may be due to the fact that

the mobile phone still plays an extremely important role in instantaneous communication, which was the initial purpose of the invention of the mobile phone. The second factor (α = .82), online transactions, is a new gratification, which reflects the motivations for using the mobile phone to pay bills online, do online banking, or shop online. The third factor (α = .77), affection, reflects the motivations for using the mobile phone to show affection. Items such as "to always be available to the children" and "to feel closer to your family members" had the highest means on this factor, followed by "to let others know you care for them" and "to allow parents to carry out family responsibilities while at work." Mobility was the fourth factor (α = .88); this factor reflects that the motivations for using the mobile phone were to eliminate the need to obtain change (coins), line up to use public phones, and look for a fixed public telephone. The low mean item scores suggest that mobility is no longer a strong motive due to the widespread use of mobile phones. The fifth factor (α = .76), relaxation, reflects that the mobile phone was used to relieve boredom as well as to enjoy the pleasures of talking to people, gossiping, and chatting with friends or family. The last factor (α = .77) was information seeking, which marks the use of the mobile phone for keeping up-to-date with social events and checking traffic, stock prices, weather, and news updates.

Hypotheses Testing

H_1 posits that the more migrant workers find the use of mobile phones gratifying, the more they will use mobile phones in distance parenting. The results of the bivariate analysis (Table 4) show that calling, text messaging, and audiovisual interaction were significantly related to all six gratifications in the use of mobile phones in distance parenting (r ranged from .12 to .33, $p < .01$ and below). However, the results of the regression analyses (Table 5), after controlling for demographics, show that calling was significantly predicted only by affection (β = .15, $p < .05$) and relaxation (β = .16, $p < .01$). Similarly, text messaging and audiovisual interaction were both significantly linked to online transactions (β = .21 and .30, $p < .001$, respectively), affection (β = .13, $p < .05$ and .17, $p < .01$, respectively), and relaxation (β = .18 and .18, $p < .001$, respectively). Thus, H_1 was only partially supported.

H_2 posits that the more migrant workers find the use of mobile phones gratifying, the greater they perceive (a) satisfaction with parenting at a distance, (b) involvement with their left-behind children, and (c) efficient communication with their left-behind children. As shown in Table 4, the correlations indicate that, with the exception of online transactions and satisfaction with parenting, all bivariate relationships were significant and positive (r ranged from .12 to .51, $p < .05$ or below). However, the results of the regression analysis (Table 6), after controlling for demographics, show that satisfaction with parenting, involvement, and communication were significantly, positively, and fully predicted by only instantaneous communication and affection gratifications in using mobile phones in distance parenting. Other predictors significantly predicted only some dimensions of PCRI. Therefore, H_{2a}, H_{2b}, and H_{2c} were also partially supported.

H_3 hypothesized that the more frequently migrant workers use their mobile phones for distance parenting, the greater they perceive (a) satisfaction with parenting at a distance, (b) involvement with their left-behind children, and (c) efficient communication with their left-behind children. As shown in Table 4, the correlations indicate that calling was significantly related to satisfaction with parenting (r = .20, $p < .001$),

Table 4 Zero order correlation of all key variables

	2	3	4	5	6	7	8	9	10	11	12
1. Calling	.53***	.39***	.27***	.22***	.28***	.24***	.29***	.22***	.16**	.13**	.20***
2. Text messaging		.65***	.15**	.28***	.21***	.14**	.31***	.22***	.10	.18***	.12*
3. Audiovisual interaction			.14**	.33***	.18**	.16**	.32***	.18***	.07	.14**	.10
4. Instantaneous communication				.37***	.58***	.50***	.31***	.54***	.38***	.44***	.51***
5. Online transaction					.11*	.31***	.37***	.29***	.18***	.13*	.01
6. Affection						.31***	.38***	.53***	.44***	.44***	.57***
7. Mobility							.20***	.42***	.23***	.15**	.19***
8. Relaxation								.33***	.12*	.21***	.13*
9. Information-seeking									.29***	.19***	.28***
10. Involvement										.59***	.46***
11. Communication											.50***
12. Satisfaction with parenting											

$*p < .05$, $**p < .01$, $***p < .001$; $N = 378$

Table 5 Hierarchical regression of demographics, gratification sought on mobile phone usage patterns

Independent variable	Calling	Text messaging	Audio-visual interaction
Block 1: Demographics			
Age	-.15*	-.01	-.08
Gender (Female = 1)	.04	-.07	.07
Education	-.13*	-.01	.11
Income	.17**	.22***	.10
Kid's age	.20**	.14*	.02
Kid's gender (Female = 1)	.04	.08	.18*
ΔR^2	.04	.07	.06
Block 2: Gratifications			
Instantaneous communication (Immediate access & reassurance)	.05	-.12	-.12
Online transaction	.10	.21***	.30***
Affection	.15*	.13*	.17**
Mobility	.11	.02	.05
Relaxation	.16**	.18**	.18**
Information-seeking	-.01	.09	.02
ΔR^2	.13	.16	.16
R^2	.17	.23	.22
Adjusted R^2	.14	.20	.19
F	6.26***	8.81***	8.48***
n	378	378	378

*$p < .05$, **$p < .01$, ***$p < .001$; $N = 378$

communication ($r = .13$, $p < .01$), and involvement ($r = .16$, $p < .01$). Texting was significantly linked to communication ($r = .18$, $p < .001$) and satisfaction with parenting ($r = .12$, $p < .05$). Audiovisual interaction was related to communication ($r = .14$, $p < .01$) in the PCRI. However, as shown in Table 6, the hierarchical regression analyses reveal that, after controlling for demographics and gratifications, calling significantly predicted all three dimensions of PCRI (β ranged from .15 to .18, $p < .05$), but text messaging and audiovisual interaction had no effect on PCRI. Therefore, H_{3a}, H_{3b}, and H_{3c} received only some support.

Predicting Mobile Phone Usage Patterns in Distance Parenting

Three parallel regression analyses were conducted to assess the relative influences of demographics and gratifications sought on the patterns of migrant workers' mobile phone usage in distance parenting (i.e., addressing RQ_2). Table 5 shows that migrant workers who often used calling via the mobile phone to perform their parenting roles from a distance tended to be younger ($\beta = -.15$, $p < .05$) and less educated ($\beta = -.13$, $p < .05$), with higher incomes ($\beta = .17$, $p < .01$). The results also show that children's age also affected the patterns of migrant workers' mobile phone usage in distance

Table 6 Hierarchical regression of demographics, gratification sought and mobile phone usage patterns on PCRI

Predictors	Parent-Child Relationship Inventory (PCRI)		
	Satisfaction with parenting	Involvement	Communication
Block 1: Demographics			
Age	-.02	.05	.20**
Gender (Female = 1)	-.02	-.08	-.00
Education	-.02	.03	.09
Income	.08	-.04	-.03
Kid age	-.05	-.16*	-.16*
Kid gender (Female = 1)	.01	.17**	.13*
ΔR^2	.01	.06	.05
Block 2: Gratifications			
Instantaneous communication (Immediate access & reassurance)	.40***	.13*	.37***
Online transaction	.11*	.12*	.01
Affection	.45***	.38***	.31***
Mobility	-.07	.03	-.08
Relaxation	-.08	-.12*	.05
Information-seeking	-.08	.01	-.17**
ΔR^2	.43	.23	.29
Block 3: Mobile phone usage pattern			
Calling	.18*	.15*	.15*
Text Messaging	-.02	-.03	.12
Audiovisual interaction	.06	.07	.06
ΔR^2	.01	.01	.01
R^2	.45	.30	.35
Adjusted R^2	.42	.27	.32
F	19.25***	10.42***	13.02***
n	378	378	378

*$p < .05$, **$p < .01$, ***$p < .001$; $N = 378$

parenting. The migrant workers called the older children ($\beta = .20$, $p < .01$) more frequently. Showing affection ($\beta = .15$, $p < .05$) and relaxation ($\beta = .16$, $p < .01$) were also significant predictors for migrant workers to use their mobile phones in carrying out distance parenting. The results also show that the migrant workers who often used mobile phone text messaging for distance parenting tended to have higher incomes ($\beta = .22$, $p < .001$) and older children ($\beta = .14$, $p < .05$). The gratification variables, particularly online transactions ($\beta = .21$, $p < .001$), affection ($\beta = .13$, $p < .05$), and relaxation ($\beta = .18$, $p < .01$), were significant in predicting migrant workers' usage of mobile phone text messaging in distance parenting. With regard to the patterns of migrant workers' mobile phone audiovisual usage, the results show that migrant

workers with female children ($\beta = .18$, $p < .05$) were more likely to use the audiovisual functions of their mobile phones in distance parenting. The gratification variables of online transactions ($\beta = .30$, $p < .001$), affection ($\beta = .17$, $p < .01$), and relaxation ($\beta = .18$, $p < .01$) were also significant predictors for the patterns of migrant workers' mobile phone audiovisual usage in distance parenting.

Predicting the PCRI

To examine the extent to which demographics, gratifications sought from mobile phone usage, and patterns of mobile phone usage predicted PCRI (i.e., addressing RQ$_3$), three parallel hierarchical regressions analyses were conducted. The entry order of predictors for the hierarchical regression models is consistent with the study logic. The effects from migrant workers' socio-psychological needs in mobile phone usage were examined first which drive the usage patterns of mobile phone for distance parenting, and subsequently affecting PCRI. Table 6 shows that children's age ($\beta = -.16$, $p < .05$) and gender ($\beta = .17$, $p < .01$) were significant predictors of the migrant workers' involvement in distance parenting. Moreover, the gratification variables of immediate access and reassurance ($\beta = .13$, $p < .05$), online transactions ($\beta = .12$, $p < .05$), affection ($\beta = .38$, $p < .001$), and relaxation ($\beta = -.12$, $p < .05$) significantly predicted involvement in distance parenting by the migrant workers. With regard to the communication dimension of PCRI, migrant workers' age ($\beta = .20$, $p < .01$), children's age ($\beta = -.16$, $p < .05$), and children's gender ($\beta = .13$, $p < .05$) were all significant predictors. Moreover, the gratification variables of immediate access and reassurance ($\beta = .37$, $p < .001$), affection ($\beta = .31$, $p < .001$), and information seeking ($\beta = -.17$, $p < .01$) were significant in predicting migrant workers' communication in distance parenting. In addition, the dimension of satisfaction with parenting was significantly predicted by the three gratification variables of immediate access and reassurance ($\beta = .40$, $p < .001$), online transactions ($\beta = .11$, $p < .05$), and affection ($\beta = .45$, $p < .001$). Among these mobile phone usage patterns for distance parenting, only calling by mobile phone significantly predicted migrant workers' satisfaction with parenting, involvement, and communication.

Discussion and Conclusions

The results of this study indicate that migrant workers' gratifications sought from mobile phone use in southern China, which include immediate access and reassurance, online transactions, affection, mobility, relaxation, and information seeking, were largely consistent with previous research. It is interesting to note that items assessing the two gratifications, immediate access and reassurance, were combined in the process of the principal components factor analysis. This is probably because these two gratifications were similar: both indicated that the motivation for mobile phone usage was instantaneous communication. It is also worth noting that the ability to make online transactions was a new gratification of mobile phone usage by migrant workers, especially in their roles as parents far away from their children at home. With the development of mobile phone technology, it has become easier and safer for migrant workers to transfer money, view account balances, pay bills within China, and send

money to their left-behind children or other family members with a Chinese bank account. Despite their low levels of education, migrant workers show high adoption rates in making online transactions through mobile phones.

Furthermore, the gratifications of online transactions, affection, and relaxation were the strongest predictors of the migrant workers' usage of mobile phones in distance parenting. Because the migrant workers were separated from their left-behind children, they needed to find ways to send money to cover their children's living expenses. Online transactions through mobile phones fulfilled this need because these devices are safer and easier to use than traditional channels of transferring money. In fact, the gratification gained through online transactions was the only predictor that was significantly and positively linked to two specific mobile phone usage patterns: text messaging and audiovisual interaction. This suggests that migrant workers who are comfortable with texting and interacting with audiovisual apps in mobile phones are also those who are confident in the safety of conducting online transactions. Showing affection also played a significant role in affecting the patterns of migrant workers' mobile phone usage in distance parenting. The results of this study indicate that migrant workers may largely rely on mobile phones to communicate with their left-behind children to maintain quality in their parent-child relationships. Because affection was a significant predictor of the patterns of migrant workers' usage of the mobile phone in calling, text messaging, and audiovisual interaction, this suggests that migrant workers show affection and love to their children through these three usage patterns. Moreover, relaxation was a strong predictor of the patterns of migrant workers' mobile phone usage in distance parenting, especially for the purposes of passing time, relieving boredom, and chatting with friends. This indicates that migrant workers spend a significant amount of time on their mobile phones after work. This result also implies that migrant workers are more likely to contact their children when they seek relaxation after work. The results additionally show links between demographics, especially differences in children's age, and the patterns of migrant workers' mobile phone usage. Younger and less-educated migrant workers are more likely to use the mobile phone calling function to communicate with their left-behind children. In addition, migrant workers with higher incomes and older children are more likely to make phone calls and send text messages to communicate with their children. Interestingly, migrant workers engage in more interactions with their female children through the use of WeChat audio, QQ video, and phone games. The reason for this finding may be that female children of migrant workers are generally more dependent than male children on their parents.

These findings also echo the fact that in a media-saturated society, people not only consume the content produced by the media, but also participate in media content creation, which is largely due to increasing new media literacy. In the current study, migrant workers actively used mobile phones to communicate with their children. On one hand, the workers relied on traditional approaches, such as voice calling and text messaging, to maintain family relationships with their children. On the other hand, the workers proactively adopted new technologies to further improve their communication quality. For example, a large number of migrant workers used new media functionalities, such as WeChat audio, QQ video, and phone games to interact with their left-behind children. In fact, the popular use of WeChat audio, WeChat video and QQ video for Chinese migrant workers in communication with children they left behind may be

largely due to their functional similarity with traditional calling or text messaging. Also, it is undoubtedly that these kinds of audio visual capabilities provided by WeChat and QQ involve more profound interaction with visual and aural engagement, whereas other types of audiovisual capabilities enabled by WeChat and QQ, such as phone games and music-sharing, facilitate the communication indirectly with latent and imperceptible emotional attachment. As for expense, it is generally agreed that the use of WeChat and QQ audiovisual interactions, including audio/video calling, playing games, and sharing music, only requires the access of wireless network or data traffic without paying extra bill. So the decision to use which feature is more likely to be based on the user habits, instead of the consideration of cost.

The results also show that demographic characteristics, gratifications sought, and different mobile phone usage patterns were linked with different dimensions of PCRI. Older migrant workers seem to have a better quality of communication with their left-behind children. The reason for this finding may be that older parents tend to raise children who are more able in many respects, such as social functioning and educational attainment; older parents are also more willing to communicate with their children. The age and gender of the children were also significant predictors of migrant workers' attitudes toward the effects of parenting. Migrant workers showed greater communication and involvement with their younger children and daughters. As previously mentioned, girls are generally more reliant than boys on their parents, and younger children require more care than older children, which could account for the findings in this study. The gratifications that migrant workers sought in mobile phone usage were associated with different PCRI variables. Instantaneous communication (e.g., immediate access and reassurance) and affection were the strongest predictors of PCRI. These predictors were significantly and positively related to migrant workers' satisfaction with parenting as well as their involvement and communication with their left-behind children. Because the migrant workers were separated from their children, it was especially important for them to stay in touch with the children and ensure smooth communication. Showing affection and love to one's children is a primal parental instinct; this assumption is consistent with the findings of the current study that affection is a significant predictor of PCRI. Online transactions, a new gratification sought in mobile phone usage, was significantly associated with the migrant workers' satisfaction with parenting and involvement in their children's lives. The reason for this finding may be that by making convenient and safe online transactions through their mobile phones, the migrant workers can easily buy various items for their children, send them money, and pay their phone bills. This capability induces in the migrant workers the feeling that they are participating in their children's lives and increases their parental satisfaction. However, relaxation was a negative predictor of the migrant workers' involvement with their children. Information seeking was also negatively associated with the migrant workers' communication with their left-behind children. It is reasonable to assume that if the migrant workers frequently use mobile phones to chat or gossip with their friends or to check the weather, traffic updates, or the news, they may spend less time communicating with their children, which can be interpreted as the sign of negative relationship quality.

Finally, as expected, the patterns of the migrant workers' mobile phone usage in distance parenting were also linked to PCRI. The use of mobile phones to call children was significantly and positively related to the migrant workers' attitudes toward their

perceived parent-child relationship quality. However, text messaging and audiovisual interactions with children showed no significant influence on PCRI. These results suggest that synchronous voice communication is more important for distance parenting because spoken words or tone of voice may provide the participants with more information. To be specific, the voice conveys various perceptions to the listener and gives a psychological dimension to the words being spoken. For example, seriousness, happiness, sadness, or anger can be evoked in the listener. The results of the study suggest that to build and maintain relationships with their left-behind children, migrant workers should conduct more voice communication with them through the use of mobile phones. Although audiovisual interaction may also be synchronous, phone games and the sharing of music (also included in the measurement of this dimension) may not be as effective as simply making a voice call to facilitate better parent-child relationship quality. Besides, gaining wireless access to the Internet for text messaging and audiovisual interaction may not always be easy in factories.

Implications

The mobile phone used to be regarded as a sign of conspicuous consumption, and for a long time, college students, white-collar workers, and the middle and upper classes were targets for the sale of these devices. However, the findings of this study reveal that underclass workers with lower wages use mobile phones at increasingly higher rates. Nevertheless, the attention paid to migrant workers by both market development and academic research has been far from sufficient.

It has been speculated that China's millions of rural workers could become a serious threat to social stability unless their problems of family instability can be solved. Because workers who have migrated from rural areas to cities toil long hours, they face the severe hardship that they are rarely able to take their children with them. Roberts (2014) found that 70% to 80% of migrant workers in China reported feelings of inadequacy, guilt, and anxiety about their absence from their children's lives, which has led to low production and even errors in their jobs. The current study found that the mobile phone, as an instant communication tool, has a tremendous positive impact on the quality of communications between migrant workers and their children living elsewhere. The results indicate that because of geographical boundaries, the use of mobile phones is extremely meaningful in improving migrant parents' involvement and communication with their left-behind children as well as enhancing their satisfaction with parenting. Specifically, the call function of the mobile phone is the dominant approach used in distance parenting. One can safely speculate that the encouragement and facilitation of migrant workers' mobile phone usage with regard to calling, text messaging, and audiovisual interaction would achieve a win-win situation for migrant workers in terms of both improving their work efficiency and building better family relationships. However, even with the advent of inexpensive mobile phones and accessible Internet connections, the problem remains that the cost of long-distance calls is too expensive for migrant workers with relatively low incomes. Even though QQ, WeChat, and mobile phone applications are replacing mobile phone texting and calling, these new applications require access to a wireless network (Wi-Fi), which is not always available to migrant workers. Furthermore, it could be even more difficult for left-behind children to access free Internet because most of them live in rural areas.

With regard to uses and gratifications, the results of this study are consistent with previous findings that the gratifications sought in mobile phone usage by migrant parents fall into the categories of affection, mobility, relaxation, information seeking, and instantaneous communication (immediate access and reassurance). However, this study reveals a new gratification sought in mobile phone usage: online transactions by which users can perform monetary transactions online, such as online shopping, paying bills online, and making remittances online. Migrant workers tend to send a large portion of their wages home in the form of remittances, and the mobile phone plays a major role in facilitating these transactions. This capability is particularly useful for migrant parents who send money home to their children in rural villages. Electronic transfers have lower interest rates and can save time because the user does not need to go to the bank in person. This finding could be used to extend the uses and gratifications theory, which future research could then use to examine other social groups.

Limitations and Suggestions for Future Research

First, this study was built on previous research in the West regarding PCRI and the U&G of mobile phone usage. Due to cultural differences between Western countries and China and the fact that the present study was conducted in mainland China, different results are likely to be obtained. Therefore, the findings in this study can be generalized only to the context of mainland China. Second, this study focused on migrant workers employed at low-paid jobs in factories. Thus, future research could extend the sample to include various classes of migrant workers. Moreover, the present research did not study the perspective of children regarding distance parenting. Therefore, future research could investigate the perspectives of both migrant workers and their left-behind children, with the aim of determining how each group views the effectiveness and shortcomings of distance parenting through the mobile phone. Finally, because the mobile phone is not the only device used in distance parenting, future research should consider other methods used to maintain the relationship quality of migrant workers and the children they leave behind.

Compliance with Ethical Standards

Conflict of Interest   The authors declare that they have no conflict of interest.

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