

ORIGINAL ARTICLE

**Simultaneity, Sequentiality, and Speed:
Organizational Messages About
Multiple-Task Completion**Keri K. Stephens¹, Jaehee K. Cho², & Dawna I. Ballard¹

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Workplace norms for task completion increasingly value speed and the ability to accomplish multiple tasks at once. This study situates this popularized issue of multitasking within the context of chronemics scholarship by addressing related issues of simultaneity, sequentiality, and speed. Ultimately, we consider 2 multiple-task completion strategies discussed in the literature on polychronic behavior, dovetailing (or sequentially accomplishing tasks) and simultaneously accomplishing tasks. Focus group and experimental findings support the existence of both simultaneous and sequential multitasking styles. Additionally, each is linked to varying perceptions of work pace, workload, and availability outside of work hours. The developed measurement scale offers a communication-focused theoretical contribution to multitasking concepts. Implications for these findings and future directions are also discussed.

doi:10.1111/j.1468-2958.2011.01420.x

While popular notions of multitasking point to general issues surrounding time and task completion in the contemporary work environment (e.g., Belson, 2007; Mantell, 2011), general use of the term does not reflect the finer-grained differences regarding how people actually prefer to work across multiple tasks (Stephens, 2007). Instead, discourse about multitasking becomes a superficial catchall and a generic mandate for getting more done in less time. This gap between managerial discourse and organizational members' actual temporal experience points to chronemics as an area of communication scholarship that demands thoughtful interrogation in the 21st century (Ballard, 2007). Particularly, the relationships among speed, availability, workload, multitasking, and communication—frequently referenced in popular discourse—are ripe for investigation by communication scholars.

Given the recent surge in popular discussions about contemporary postindustrial values associated with juggling multiple tasks across multiple audiences and communication platforms (Belson, 2007; Lohr, 2007; Mantell, 2011; Shellenbarger, 2007), in this investigation we question the presumption that there is a uniform understanding

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of the common multitasking term. As we examine in the current project, research on polychronicity (Bluedorn, 2002; Bluedorn, Kaufman, & Lane, 1992) suggests that there are both simultaneous and sequential types of multiple-task completion preferences. While the former is classically defined as “multitasking,” the latter may characterize a prominent means of multiple-task completion as well. We extend the communication literature on work, in general, and chronemics, in particular, by offering more precision to the common notion of multitasking.

Specifically, we expand on current conceptions of polychronicity (Bluedorn, 2002; Bluedorn, Kalliath, Strube, & Martin, 1999) and multitasking (Ophir, Nass, & Wagner, 2009) to include the communication literature on multicommuting (Reinsch, Turner, & Tinsley, 2008), simultaneity (Monge & Kalman, 1996), and sequentiality (Stephens, 2007) as well as the issue of pace (Ballard & Seibold, 2003). This extension more clearly differentiates among varied types of multiple-task completion preferences. To accomplish these objectives, below we review the literature and provide details of our focus group and experimental method. We end by sharing the results and discussing the implications of this study for future communication research.

Literature review

Theoretical background: Simultaneity, sequentiality, and speed

Polychronicity has been used to describe a person’s temporality and an organization’s temporality (Bluedorn, 2002). The term describes a preference for doing more than one thing at time (compared to the monochronic approach of doing one thing at a time) and the belief that this preference is the best way to carry out tasks (Bluedorn, 2002). Bluedorn (2002) carefully distinguishes the term polychronicity from multitasking, describing multitasking as having both a time orientation and a speed dimension: Multitasking not only reflects the concurrency of events, but it also implies that the events occur faster. Further, in earlier work, Bluedorn et al. (1992) explain that there are two patterns of behavior that both reflect polychronic time preferences: simultaneity and dovetailing. Simultaneous patterns reflect the production of two things at the exact same time, while dovetailing can be described as the interspersing of multiple activities over time, or sequential task accomplishment. In contrast to polychronicity, monochronicity is reflected in the preference for focusing entirely on one task at a time. They present these behaviors on a continuum and suggest that having a mixed preference for monochronicity and polychronicity falls in the middle of the continuum anchored by monochronic and polychronic time. In more recent work, Bluedorn (2002) only includes simultaneous task completion in his definition of polychronicity; however, based on related theorizing on communication processes, we believe that the issue of simultaneous versus sequential task completion merits closer attention.

Specifically, communication scholars have led in distinguishing between time-related behaviors that occur simultaneously or sequentially (Monge & Kalman, 1996)

as well as how this relates to the issue of speed (Ballard, 2009). In their theoretical framework, Monge and Kalman (1996) explain how different time windows allow us to distinguish between activities occurring at the same time—or simultaneously—and those that occur more sequentially. Ballard and Seibold (2003) address this distinction in their description of the temporal dimension, *linearity*. They explain the difference between simultaneous and sequential (which they termed successive) task completion styles:

Members enact linearity via the number of activities or tasks they carry out in *successive* time frames, as in daily calendars demarcated by 15-minute intervals (a linear pattern), rather than the activities they engage in *simultaneously* (a non-linear pattern, referred to as multi-tasking). (p. 387).

They also explain how activities that occur at a greater speed call for minimizing the time window in order to reveal differences between task completion styles.

Thus, while Ballard and Seibold (2004) consider pace conceptually distinct from linearity, nonetheless, they find these two dimensions empirically correlated and practically connected in everyday work: Pace determines the number of complete activity cycles (Ballard, 2009) that can be seen in a given window of time. The faster the rate of task accomplishment, the smaller the time window must be in order to distinguish simultaneity from sequentiality.

The concepts of simultaneity and sequentiality have been elaborated concerning the use of information and communication technologies (ICTs) in the research on multicommuting (Reinsch et al., 2008) and the work on ICT succession theory (Stephens, 2007; Stephens & Rains, 2011; Westerman, Van Der Heide, Klein, & Walther, 2008). Reinsch et al. (2008) provide a thought-provoking examination of how people actually carry on simultaneous conversations. Their work focuses on situations where people conduct multiple conversations—termed multicommuting—using communication technologies like instant messaging. Reinsch et al. distinguish between multicommuting and multitasking because the act of maintaining an ongoing dialog with two or more people can be much more complex than simply engaging in two or more tasks. Multicommuting can be considered an especially complex form of multitasking and some individuals might prefer multitasking, but not multicommuting. Multicommuting requires people to switch roles and adjust to various audiences, while multitasking might not require this consideration of others. Stephens (2007), on the other hand, proposes theoretical justifications for how people might use communication technologies in sequences to help them accomplish organizational goals such as persuasion or information. Westerman et al. (2008) further extended this theory to empirically test personal relationships and Stephens and Rains (2011) empirically test this theory with persuasion goals.

Multiple-task completion norms and important organizational outcomes

Several studies have used Bluedorn et al.'s (1999) inventory of polychronic values (IPV) to link temporal values to outcomes important for communication researchers.

These findings suggest that the larger issue of multiple-task completion preferences also merits scholarly attention. For example, Turner, Grube, Tinsley, Lee, and O’Pell (2006) surveyed and interviewed employees of an organization that extensively used instant messaging (IM) and e-mail to multitask. They found that supervisors rated employees who followed the organizational norms for using e-mail and IM as higher performers. Interestingly, they did not find that the employees who adhered to the organizational media use norms were also more committed to the organization. They conclude it is important to understand more about how people participate in multiple conversations at work.

Temporal values, multitasking, and millennials

Increasingly, communication research is considering more complex contexts that involve simultaneous and sequential communication processes occurring at faster and faster rates. Thus, based on extant communication theory and in light of contemporary organizational discourse about multitasking, it is important to consider that there might be different types of preferences for multiple-task completion (and related values), especially for people in technology-infused organizations. One way to begin to understand contemporary perceptions of temporal values is to focus on a context where this is likely highly relevant. Thus, in this study, we have chosen to focus on young adults ready to enter the workforce. These Millennials are in an ideal place to be observers of these temporal organizational values because: (a) they are practiced multitaskers (Baron, 2008, 2010), (b) they are at an important moment in their lives—ready to enter the full-time job market—thus perceptions of organizational values are important to them, and (c) their extensive multitasking experience may give them a more nuanced understanding of this behavior in practice.

One particular value that digital natives (members of the Millennial generation) express is the desire to multitask (Connaway, Radford, Williams, & Confer, 2008; Kofman & Eckler, 2005; Mason, Barzilai-Nahor, & Lou, 2008). Not only do they express this desire, but many studies on college students indicate that they regularly multitask and multicomunicate (e.g., Baron, 2008, 2010). In a series of studies conducted by Baron and her students (2010) between 2004 and 2005, she found that with some technologies, like instant messaging, students view it as weird to *not* carry on multiple conversations simultaneously. The desire to multitask, might now be a habituated response.

The technology-based environmental contexts where they have grown up may have led Millennials to be well-practiced at multitasking, reducing their tolerance of monotasking. As Millennials become acclimated to compressed time and space created by information and communication technologies (ICTs), they are more likely to give values to multitasking and multicomunicating. These temporal values are likely linked to how they want to complete tasks including communicative tasks. While past communication research has begun to articulate theoretical differences between sequentiality and simultaneity (Monge & Kalman, 1996; Stephens,

2007; Stephens & Rains, 2011), we have limited empirical research to understand or measure these differences. Therefore, we first explore the following research question:

RQ1: What types of temporal values do Millennials express for multiple-task completion?

This research question allows us to capitalize on the potential nuanced understanding of multitasking and temporal values of Millennials, yet it is plausible that the findings are applicable beyond young adults and reflect many contemporary work environments.

Temporal considerations and work outcomes

Research on contemporary workers, especially the Millennial generation, suggests they enjoy multitasking (Roberts, Foehr, & Rideout, 2005), yet they also want to keep in contact with their personal lives while at work (Howe, & Strauss, 2000; Israel, 2006; Lancaster & Stillman, 2002; McMillan & Morrison, 2006). This focus on constant connections and perpetual contact (Katz & Aakhus, 2002) implies that these workers' lives may be perceived as faster paced and with fewer boundaries between their work and personal contacts.

In an interview with Allen Bluedorn (1999) and Edward Hall—the originator of the polychronism–monochronism constructs—they observed that since the constructs were first developed, cultural changes in the United States have made it difficult to classify Americans as either mostly polychronic or monochronic. Ballard and Seibold (2000) argue that this difficulty arises because of the inherently multidimensional nature of the constructs. For instance, in traditional conceptualizations of monochronism (Hall & Hall, 1990), organizational members in the United States did one thing at a time in order to accelerate their task accomplishment rate. Conversely, organizational members in polychronic cultures did more than one thing at a time not because of concerns regarding speed, but a focus on being available for emergent demands based on any number of relational or task developments. Bluedorn (2002) clarifies the speed issue:

Multitasking shares some elements in common with polychronicity. . . because both involve the engagement of several tasks simultaneously. But a different orientation to speed distinguishes the concepts. Polychronism is purely about preferences for sequence: one thing at a time or moving back and forth among several tasks. It is not about getting more things done, it is not about doing things faster. (p. 107)

Yet despite Bluedorn's (2002) distinction between multitasking, speed—or work pace, and multiple-task completion practices, it is important to examine relationships between these variables, especially now that contemporary work patterns, such as being available outside of traditional work hours could also relate to temporal values. This leads to the second research question:

RQ2: How do different organizational temporal values influence perceptions of work pace, work load, and the need to be available outside of work hours?

Gender and work outcomes

There is some research that suggests women and men have different views on polychronicity, yet the results are mixed (Bluedorn, 2002). Hall (1983) reviewed several studies and claimed that women were more polychronic, while men had more monochronic tendencies. Bluedorn (2002) pulls together the studies because Hall's claims and in the 13 studies he reviews, five found that women were more polychronic than men, two found men to be more polychronic, and six found no differences. This is not surprising given that the studies collectively span 11 years and these studies appear one to two decades after Hall's original work.

While the findings for a general gender predisposition regarding polychronicity are mixed, it is possible that consistent gender differences exist when considering perceptions of related temporal issues such as the pace of work, work load, and availability outside of work (Hochschild, 1997). When considering that younger people might hold different temporal values and that technology and workplace norms could be changing with respect to valuing multiple-task completion practices, it is prudent to revisit potential gender differences. Therefore, in the present study, we examine differences between young men and women's perceptions regarding the pace of work, work load, and availability outside of work, in addition to temporal values. This leads to the following final research question:

RQ3: How do young men and women differ concerning their views of organizational temporal values with respect to work pace, work load, and the need to be available outside of work hours?

Method

This study consisted of focus groups to address the first research question and the subsequent administration of an experiment to address the remaining research questions. The focus groups were used to create a measurement scale and to design experimental conditions to meaningfully distinguish among various types of temporal values. In particular, the goal of the focus group was to use existing communication research suggesting differences between sequentiality and simultaneity, and explore how that could inform the most commonly used polychronicity values scale created by Bluedorn et al. (1999). The focus group findings articulated differences between three types of multiple-task completion preferences: simultaneous tasking, single tasking, and sequential tasking. The subsequent experiment was conducted to test the effect that exposure to an organizational website depicting one of three types of multiple-task completion preferences had on peoples' opinions of work practices in those organizations. We begin with a discussion of the focus group followed by the more detailed portion of this study, the experimental design.

Focus group method

Participants and procedure

A total of 63 participants, in two different focus groups, provided focus group data to design the additional measurement items for the different types of multiple-task completion preferences. These participants ranged from 20 to 24 years of age and were enrolled in two upper division elective communication courses as part of an undergraduate degree. There were 29 participants in the first focus group and the second focus group was conducted 6 months later and contained 34 participants. The focus groups were conducted as part of an introduction to a topic in the course on understanding preferred work practices. At the beginning of each focus group, participants completed a pen and paper version of the Bluedorn et al.'s (1999) polychronicity values scale (IPV). For the focus groups, this scale was modified from the original organizational focus, to an individual focus by replacing the words related to the organization with the word "I." This is different from the original scale's intended level of analysis, but it is similar to the polychronic congruence focus found in other studies such as Slocombe and Bluedorn (1999). The participants were asked to sum the 10 items on the questionnaire and examine their overall polychronicity score (ranged from 10 to 50). With their questionnaires in front of them, one of the researchers introduced the definitions of polychronic and monochronic time to the group while one of the other researchers took notes on the comments. In both focus groups, the participants were asked to discuss (a) the challenges they had in answering the questions, (b) their opinions on the acceptability of working in either a monochronic or polychronic culture, and (c) whether additional working patterns would better reflect their temporal values. Importantly, Bluedorn et al.'s index is linked to his latter (Bluedorn, 2002) conceptualization of polychronicity as limited to simultaneous task completion. The notes for each of the focus groups were compared and similar themes were found in both independent focus groups.

Focus group results

The focus groups were formed to address the first research question: What types of temporal values do Millennials express for task completion? There were five themes related to the communicative differences between polychronic values derived from the focus groups questions and these were consistent between both focus groups. The themes were: "I'm not completely monochronic or polychronic," "preference depends on the type of task," "differences in understanding of what it means to be a multitasker," "interruptions and focus are linked to temporal values," "and it is socially desirable to work 'fast.'" Both focus groups had participants who clearly reflected a monochronic perspective of working on one thing at a time yet only a few participants expressed a verbal preference for working in an organization reflecting those types of organizational values.

The participants who did not espouse a preference for monochronicity were quite diverse, yet they all self-identified themselves as “multitaskers.” Several of the participants expressed strong preferences for being allowed to use communication media simultaneously, such as texting on their mobile phones while talking with another person in a face-to-face conversation. One participant explained that when he worked on three different tasks, he had them all in front of him, and never focused on a single task for more than 10 minutes. He considered tasks quite broadly ranging from homework to conversing with friends. Regardless of values toward polychronicity, the word “ juggler” resonated with people who did not identify a monochronic preference.

There was also a very different type of temporal value expressed by some of the focus group participants who also considered themselves multitaskers. These people explained that they enjoyed working on many projects, but they did this in a more sequential manner. They did not feel that they were monochronic, yet they also had no desire to rapidly move between projects and drop one project to respond to another. They seemed to be neither monochronic nor fully polychronic, yet they shared the identification of being a multitasker with those espousing polychronic temporal values.

In the second focus group, after hearing similar responses to those in the first focus group, the facilitator further explored polychronic views. The facilitator explicitly asked about differences between desiring to work on many projects simultaneously and desiring to work on many projects, but being allowed to sequence tasks instead of handling them simultaneously. The participants who more clearly identified with being polychronic felt that simultaneous juggling reflected their preferences, while the participants expressing a more moderate perspective on polychronic preferences (approximately 45% of the participants in both focus groups) said that sequentially processing tasks, but having many to get accomplished, reflected their preferences.

On the basis of the focus group findings, two of the researchers on the study rewrote items on Bluedorn’s IPV scale and expanded it to include task completion preferences that reflect three different types of temporal values. This included monochronic values—indicating a preference for single tasking; polychronic values—indicating a preference for simultaneous tasking, and a third category which reflected a preference for sequential tasking. This third category of participants liked to engage multiple tasks, self-identified as multitaskers due to issues of speed, but they sequenced their tasks and worked on them one at a time. They reflected this sequential-task preference, or as Bluedorn et al. (1992) identified this behavior, dovetailing. These three conceptual distinctions that emerged in our focus groups were also used to design the organizational values website stimulus materials for the subsequent experiment and those findings are presented in the “Results” section. The participants in the focus groups were independent from the participants in the subsequent experiment.

Experimental design

Participants

Participants were recruited using an undergraduate communication studies research pool at a large university in the Southwestern United States. Currently enrolled undergraduate students are an especially appropriate sample for this study because they are members of the Millennial generation, which typically report enjoying a multitasking environment. Participants ranged in age from 19 to 28 ($M = 21.3$, $SD = 1.58$). Of those who reported their gender, 67.5% ($N = 160$) of participants were female and 32.5% ($N = 77$) were male. The undergraduate sample also consisted of 11.7% ($N = 28$) first-year students (freshman), 18.3% ($N = 44$) second-year students (sophomores), 35% ($N = 83$) third-year students (juniors), and 35% ($N = 83$) fourth-year students (seniors). They rated their web searching skills highly on a scale of 1–7, $M = 6.14$, $SD = .91$, $N = 243$, and thought they could learn the culture of an organization by looking at a website $M = 5.31$, $SD = 1.43$, $N = 243$.

Background on using websites to assess organizational values

When people are searching for information on a potential employer it is likely that they will be attracted to organizations espousing similar values as themselves—including temporal values and they often use Websites to search for information (Braddy, Meade, & Kroustalis, 2006; Kroustalis & Meade, 2007; Thompson, Brady, & Wuensch, 2008; Zusman & Landis, 2002). Not only do people judge the degree of fit they perceive with the organization from website design features, but they also evaluate the values and policies of these organizations (Braddy et al., 2006). With the increased attention being placed on people's ability to multitask at work, it is likely that people are evaluating their own fit with organizations displaying varying temporal values related to multiple-task completion preferences. Furthermore, as they are accessing websites of hiring organizations to learn about potential jobs (Braddy et al., 2006), using websites to present organizational temporal values is a realistic approach.

Experimental procedure

To test the experimental research questions, participants were randomly assigned to view one of the three organizational values website conditions: monochronic/single tasking, dovetailing/sequential tasking, or polychronic/simultaneous tasking. The participants participated online and were first asked a series of questions including their individual temporal values, perceived web searching ability, and demographics. Next, they viewed a website (representing their one randomly assigned organizational values condition) about an organization that might be recruiting at their university in the near future (see Appendix). Once they completed that activity, they responded to questions concerning their opinion of the temporal and communicative practices of that organization including their perception of the need to be available outside of work hours, work pace, and work load.

The website outlined the organization's values contained on a single webpage and the general values included respect for customers and employees, sticking together, and sharing in success. The organizational temporal values independent variable was manipulated in one of three bullets on the mock website. In all conditions, the first clause was, "In this rapidly changing world. . ." In the monochronic condition, the participants were further told, "working on a single long-term project is crucial for increasing the quality of performance. We respect your expertise in accomplishing major tasks in a focused manner. We create a workplace that allows you to be free from distractions. What does this mean? You will have to focus on only one task at a time." In the dovetailing/sequential condition participants were told "multitasking is crucial for increasing the effectiveness of performance. We respect your ability to perform multiple tasks, but we know that people often focus on one task at a time. What does this mean? You will have time to devote to one project at a time, even though you will be assigned multiple tasks." In the polychronic condition, participants were told "multitasking is crucial for increasing the effectiveness of performance. We respect your ability to perform multiple tasks simultaneously. What does this mean? You will have to respond immediately to various request form others, even while you are engaged in tasks of your own." The second independent variable that corresponded to a research question in this study was gender.

Measures

Unless otherwise noted, all measures were rated on 7-point scales with the anchors *strongly disagree* (1) and *strongly agree* (7). Larger values for a measure indicate a greater value on that measure.

Individual temporal values

Four items referred to as the polychronic attitudes index (PAI, Kaufman, Lane, & Lindquist, 1991) were used as a potential control variable to assess the temporal values that the individuals had in this study ($M = 5.29$, $SD = 1.20$, $N = 239$). Prior studies have reported reliabilities for this scale of .68 (Kaufman et al., 1991), and the reliability in this study was $\alpha = .89$.

Nuanced measure of polychronic values

A scale derived from the inventory of polychronic values (IPV) (Bluedorn et al., 1999) was used as a manipulation check for the perceived organizational value conditions. This scale included the 10-item measure from Bluedorn et al.'s (1999) IPV scale and three additional items developed based on the focus group portion of this study that separately assessed the sequential/dovetailing condition. Details of this scale creation and manipulation check appear in the "Results" section.

Outcome variables

Availability outside of work

Three items derived from the pressure measurement index (Williams & Cooper, 1998) were used to measure the perception of availability outside of work that would

be expected as part of the job in the hiring organization. Williams and Cooper (1998) called this factor (one part of their much larger index) life–work balance and they distinguished these activities from home–work balance, a concept more related to family responsibilities. We have chosen to call the scale used in this study, Availability outside of work, because it more accurately depicts the operationalization used in this study. Participants rated the degree to which working for this company will require them to (a) work a lot outside of work hours, (b) leave work at the office (reverse scored), and (c) be on-call and always available. These items were measured on a 5-point Likert-type scale ranging from strongly disagree to strongly agree and they had a $M = 3.06$, $SD = .74$, $\alpha = .65$, $N = 232$.

Work pace

Two items were used to measure the pace of the organization. Participants rated the degree to which working for this company will be (a) busy or (b) fast paced. These items were measured on a 5-point Likert-type scale ranging from strongly disagree to strongly agree and they had a $M = 3.6$, $SD = 1.09$, $\alpha = .91$, $N = 229$.

Work load

One item was used to measure the perceived work load at the organization. Participants rated the degree to which working for this company will contain a heavy work load. This item was measured on a 5-point Likert-type scale ranging from strongly disagree to strongly agree and had a $M = 3.6$, $SD = .99$, $N = 229$.

Results

Preliminary analyses

No univariate outliers were identified when we inspected the data. However, following the procedures specified by Tabachnick and Fidel (2001), we identified four cases that contained multivariate outliers and removed the cases from the data set. We also removed two age outliers (one was 52 years of age and one was 40 years of age) because this study focused on young people entering the workforce for the first time. Correlations between the variables in the study are found in Table 1.

Table 1 Partial Correlations for Key Study Variables

	1	2	3	4
1 (PAI) Individual temporal values				
2 Availability outside of work	.02			
3 Pace	−.01	.52**		
4 Work load	−.09	.56**	.79**	
5 Gender	.12	−.01	−.05	−.02

Note: $N = 220$ – 231 (** $p < .001$).

Scale creation to differentiate between the three temporal value conditions

The first research question's findings from the focus groups suggested that three items be added to Bluedorn et al.'s (1999) IPV scale. To ascertain the distinctiveness of these three task completion preferences, the 13 items were subjected to a confirmatory factor analysis (see Figure 1). The measures were evaluated using the factor loadings, χ^2 test of model fit, and Hu and Bentler's (1999) dual criteria of a comparative fit index (CFI) value greater than or equal to .96 and a standardized root-mean squared residual (SRMR) value less than or equal to .10. The factor loadings for the three factors were all greater than .70 (see Table 2 for the detailed factor loadings). The three-factor solution for temporal values fit the data fairly well, despite a significant chi square $\chi^2(df = 62) = 146.34, p = .00, CFI = .96, SRMR = .05, NFI = .94,$ and $RMSEA = .08.$

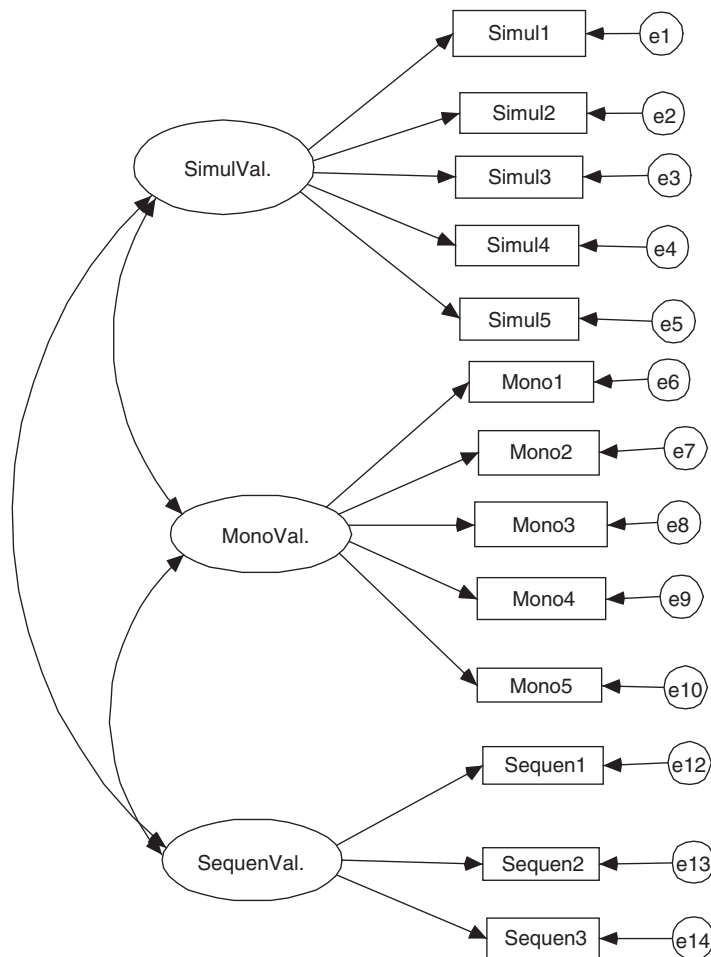


Figure 1 Factor analysis for items distinguishing between three types of temporal values.

Table 2 Factor Loadings of Temporal Value Scale Dimensions (IPV and Added Items)

Dimension	Items	Factor Loading	M	SD
Simultaneous values $\alpha = .93$	They would like to juggle several activities at the exact same time. (Simul1)	0.9	4.68	2.31
	They believe people should try to do many things at the exact same time. (Simul2)	0.89	4.15	2.13
	They believe people do their best work when they have many tasks to complete at the same time. (Simul3)	0.91	4.16	1.98
	They believe it is best for people to be given several tasks and assignments to perform simultaneously. (Simul4)	0.89	4.15	2.05
Monochronic values $\alpha = .91$	They would rather complete parts of several projects every day than complete an entire project. (Simul5)	0.69	4.07	1.92
	They would rather complete an entire project over a long period of time than complete several projects at once. (Mono1)	0.84	3.92	2.20
	When they work by themselves, they usually work on one project at a time. (Mono2)	0.83	3.95	1.99
	They prefer to do one thing at a time. (Mono3)	0.92	3.74	2.22
	They believe it is best to complete one task before beginning another. (Mono4)	0.86	4.10	2.01
Sequential or dovetailing values $\alpha = .82$	They seldom like to work on more than a single task or assignment at the same time. (Mono5)	0.69	3.78	2.01
	They believe people do their best work when they have many tasks to complete, yet focus on one task at a time. (Sequen1)	0.76	4.42	1.78
	They believe it is best for people to be given several tasks and assignments to perform while focusing on one task at a time. (Sequen2)	0.88	4.41	1.83
	People at this company juggle multiple project, but focus on one project at a time. (Sequen3)	0.69	4.23	1.87

Note: All of standardized regression coefficients for 13 items above were significant at the level of .001.

Manipulation checks

Measures were included to assess the manipulation of the three different temporal organizational values. These measures contained the 10 items from Bluedorn et al.'s (1999) IPV scale and the three additional items designed to separately assess the sequential/dovetailing condition. This scale was used to measure polychronic values of an organization, much like the original scale development effort (Bluedorn et al., 1999). The analysis of variances (ANOVAs) for each condition indicated a successful manipulation. Participants in the monochronicity condition rated it monochronic ($M = 5.32, SD = 1.43$) more so than dovetailing ($M = 3.64, SD = 1.44$) or polychronic ($M = 2.65, SD = 1.41$), $F(2, 226) = 68.16, p < .001, \eta^2 = .38, \text{power} = 1.0$. Participants in the dovetailing values condition rated it dovetailing (or sequential) ($M = 5.18, SD = 1.31$) more so than monochronic ($M = 3.89, SD = 1.51$) or polychronic ($M = 4.03, SD = 1.54$), $F(2, 226) = 18.35, p < .001, \eta^2 = .14, \text{power} = 1.0$. Participants in the polychronic condition rated it simultaneous polychronic ($M = 5.62, SD = .96$) more so than dovetailing ($M = 4.41, SD = 1.53$) or monochronic ($M = 2.80, SD = 1.69$), $F(2, 226) = 73.83, p < .001, \eta^2 = .40, \text{power} = 1.0$.

The influence of organizational temporal values on study outcomes

Research question two asked how different organizational temporal values influence perceptions of work pace, work load, and the need to be available outside of work hours. Research question three extended that to include differences between young men and women. A multivariate analysis of variance (MANOVA) was conducted to test these research questions with the manipulated temporal values nominal variable being one independent variable, gender being the second independent variable, and all three dependent measures (work pace, work load, and availability outside of work) being included in the model. PAI, the measure of individual temporal values, was not used as a control variable because it had minimal correlations with other variables (see Table 1). The results demonstrated clear distinctions between the temporal value conditions on all three dependent measures. There was a significant multivariate effect, Wilks lambda (4, 442) = 17.80, $p < .001$, partial $\eta^2 = .14$, power = 1.0, for the model. (p. 18)

Work pace

The significant univariate effects included a significant main effect of organizational temporal values on pace $F(2, 222) = 30.70, p < .001$, partial $\eta^2 = .22$, power = 1.0. Participants in the monochronic condition reported the pace being the slowest ($M = 2.98, SD = 1.08, N = 79$), followed by those in the dovetailing or sequential condition ($M = 3.72, SD = .90, N = 74$), and those in the simultaneous polychronic condition rated the pace as the fastest ($M = 4.23, SD = .90, N = 71$). Post hoc pairwise comparisons reveal that people in the monochronic condition differed from both other conditions ($p < .001$), sequential differed from monochronic at a $p < .001$ level, and sequential differed from polychronic at a $p < .01$ level.

Work load

The significant univariate effects included a significant main effect of organizational temporal values on work load $F(2, 222) = 26.04, p < .001$, partial $\eta^2 = .19$, power = 1.0. Participants in the monochronic condition reported the work load being the lowest ($M = 3.00, SD = .95, N = 79$), followed by those in the dovetailing or sequential condition ($M = 3.58, SD = .88, N = 74$), and those in the polychronic condition rated the work load as the highest ($M = 4.06, SD = .83, N = 71$). Post hoc pairwise comparisons reveal that people in all three organizational temporality values conditions differed from each other at $p < .001$ levels.

Availability outside work hours

There was also a significant main effect of organizational values on the need to be available outside of work hours $F(2, 222) = 16.26, p < .001$, partial $\eta^2 = .13$, power = 1.0. However, this main effect should be qualified by the significant interaction between the need to be available outside of work hours and sex, $F(2, 222) = 4.60, p < .01$, partial $\eta^2 = .04$, power = .77. Overall, the women followed a fairly linear path in rating the monochronic values as requiring the least availability outside of work hours and the simultaneous polychronic values as requiring the most availability with a significant difference between all three types of organization values (see Table 3 for means and standard deviations). The men, on the other hand, did not rate the monochronic or dovetailing values significantly different from one another, yet both of those values were rated as significantly less in terms of the need for availability outside of work hours than the simultaneous polychronic values (see Table 3 for means and standard deviations and see Figure 2 for a graphical depiction of this interaction).

Discussion

This study expands our current understanding of multitasking by integrating a communicative understanding and suggesting that there are at least two types of multitasking: simultaneous, and sequential (or dovetailing). It also extends

Table 3 Means and Standard Deviations for Temporal Value Differences by Sex on Availability Outside of Work

	Men		Women	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Monochronic values manipulated condition	3.02 ^a	.64	2.61 ^c	.61
Dovetailing values manipulated condition	2.79 ^a	.75	3.07 ^d	.62
Simultaneous values manipulated condition	3.49 ^b	.82	3.44 ^e	.69

Note: a is significantly different from b, c, d, and e are all significantly different from one another.

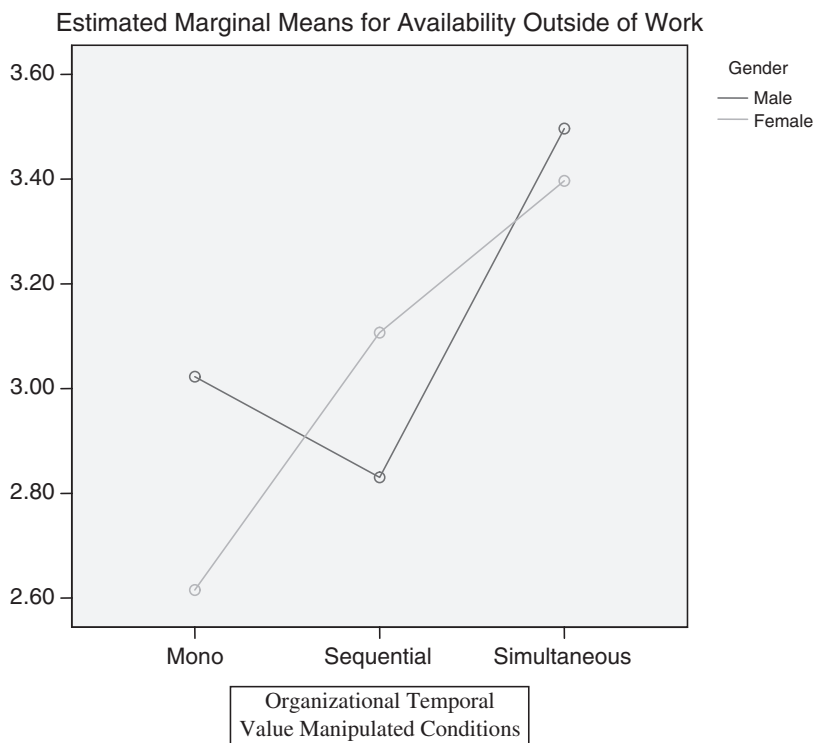


Figure 2 Interaction between men and women's perceptions of temporal values.

our current understanding of multiple-task completion preferences, and allows elaboration on how temporal values and work pace can collectively inform a contemporary perspective on multitasking. It thus contributes to the growing body of communication scholarship relating to issues of human temporality (Ballard, 2009; Ballard & Seibold, 2000, 2003, 2004, 2006; Baron, 2008, 2010; Bennett, 2000; Bruneau, 1979; Buzzanell & Liu, 2005; Hylmö & Buzzanell, 2002; Katz & Aakhus, 2002; Kirby & Krone, 2002; Kleinman, 2009; McKerrow, 1999; Monge & Kalman, 1996; Nadesan, 1997; Peterson, 1996; Stephens, 2007; Stephens & Rains, 2011; Turner & Reinsch, 2007; Wolburg, 1999, 2001), and underscores its unique relevance in contemporary organizational settings.

Our findings suggest when temporal values reflect simultaneous multitasking, people perceive that work is faster paced and that there is an increased work load. In this study, people clearly differentiated the work pace between monochronic/single tasking, dovetailing/sequential tasking, and polychronic/simultaneous tasking. The nuanced multitasking distinction in the findings for the need to be available outside of work was similar for women since they clearly differentiated between all three temporal values. Men did not differentiate between the monochronic and dovetailing conditions, yet they did feel that those conditions had less of a need for being

available outside of work hours than did the simultaneous polychronicity condition. While these findings were derived from a sample of Millennials, there is considerable conceptual applicability to many organizations and ages of workers. It is plausible that as multitasking and multicommuting practices continue to evolve, these findings will extend much more broadly. We turn now to discuss the findings in detail.

Multiple-task completion preferences & temporal values scale contributions

This study is the first to develop a measure that uses all of Bluedorn et al.'s (1999) IPV temporal values scale items, but adds the distinction between dovetailing (sequentiality) and simultaneity. Bluedorn (2002) is very careful to articulate the difference between polychronicity and pace, and he makes this claim based on Hall's (1983) findings. Yet the buzzword in the press and in the broader interdisciplinary academic research is multitasking, and few people would likely argue against the claim that multitasking implies both doing multiple things and getting more done in the process. In the current study, the experimental findings demonstrate that people clearly differentiate between different organizational temporal values and that as those values tend toward multitasking, the organizations are also perceived as faster paced.

Proposing two types of multitasking related to communication practices

As the academic discussion concerning the rise of multitasking, use of technologies like instant messaging that facilitates multicommuting (Reinsch et al., 2008), and the dissolution of many types of organizational boundaries increases, clearly distinguishing between sequentiality and simultaneity is very important. To both clarify these multiple-task completion preferences and to differentiate polychronicity from multitasking, this study suggests that when discussing multitasking, it is important to realize that there are at least two different types of multitasking: sequential and simultaneous. These different preferences have implications for outcomes examined here—that is, work pace perceptions, work load, and availability outside of work—and may provide helpful distinctions when examining other outcomes not measured here. For example, recent research on the impact multicommuting has on workplace incivility perceptions (Cameron & Webster, 2010) and research on ICT use during meetings (Stephens & Davis, 2009) can benefit from a finer distinction of types of multitasking.

These different types of multitasking findings might be explained in two ways. First, this could be a sample-specific finding. Millennials are entering the workforce with access to considerable numbers of ICTs and they have broad views on how ICTs can be used (Myers & Sadaghiani, 2010). However, these different types of multitasking might also arise because of the discourse and prolific advertising surrounding what appears to be an U.S., and possibly Western, value of multitasking (Lin, 2009). It would take considerably more research to demonstrate this speculative claim, but we know that public discourse and behavioral norms can be mutually constitutive (Fairhurst & Putnam, 2004; Mohr, 1998). People of all ages are particularly susceptible to discourse about how to be “good” employees. As they increase the amount

of multitasking and multicomputing they do to conform to the desires of a workplace, they might cope with the faster pace, and believe that being available outside of work hours is what they need to do to get ahead. Furthermore, they might feel justified in taking an extended break during work hours to conduct personal business because they know that the organization will expect them to be available outside of work. Therefore, the temporal values the organization espouses could be influencing how people work during normal business hours.

Availability beyond work hours findings

The significant availability outside of work findings provide additional evidence that the Millennial Generation is aware of how their work and personal life blend. In her examination of time lag and cross-sectional studies exploring generational differences, Twenge (2010) found that one claim concerning Millennials which appears accurate is the decline in work centrality for Millennials—that is, that the younger the generation, the more they value leisure time.

While this study did not evaluate the desirability of this boundary, it does present quite strong evidence that both men and women believe that when compared to a monochronic environment, the simultaneous polychronic work environment is faster paced, has a higher workload, and carries a higher expectation of being available outside of work hours. It is plausible that the increased pace, higher workload, and availability could be desirable, and it is possible that some people feel comfortable having the perpetual contact (Katz & Aakhus, 2002) with personal relationships while they are at work.

It is also interesting to see how men and women interpreted the effect that different temporal values have on their need to be available outside of work hours. Men did not view the organizational temporal values of monochronic and dovetailing as being different, while women saw a clear difference. For men, availability was only significantly more if they worked in an organization espousing polychronic temporal values. Women differentiated between all three temporal value conditions and identified the need to be available as becoming increasingly more between monochronic and dovetailing and between dovetailing and polychronic organizational values.

The limited past research on gender differences and time orientation suggests that women may have a preference for polychronic activities (Hall, 1983; Hall & Hall, 1990). While this claim is a bit speculative considering the conflicting empirical research findings (Bluedorn, 2002), this study does demonstrate that women differentiate between these three task completion preferences with respect to the need to be available outside of work hours. They appear to link organizational temporal values and the bleeding of work into to their personal time in finer detail than men. This could support the results from Williams and Cooper's (1998) pressure and stress study where they found working women made more use of time management strategies than men. Perhaps women are more aware of these nuanced differences and their awareness shapes how they manage their availability. It will be

important to explore these availability preferences further and include the dovetailing distinction in future research.

Limitations and opportunities for future research

While this study does offer a contribution to communication, multitasking, and temporal values research it is limited by the sample of Millennials. Generalizing beyond this demographic could be a mistake, especially because Millennials have demonstrated their desires to multitask to a greater degree than other generations (Connaway et al., 2008; Kofman & Eckler, 2005; Lancaster & Stillman, 2002; Mason et al., 2008; Rainie, 2006). However, many of the findings appear conceptually applicable to broader working audiences. There is also a fair amount of artificiality in a laboratory environment like the current one. While we tried to make it realistic for the participants by saying that this company might come to interview at their university, we did have to artificially distinguish between the three types of temporal values. It is more likely that organizations espouse combinations of those values, yet for experimental purposes it is important to keep them distinct.

Future research

The measurement scale distinguishing between monochronic, dovetailing, and simultaneous polychronic organizational values offers some promising opportunities for future research and it forms a solid communication-focused theoretical contribution to multitasking concepts that could extend beyond the Millennial Generation. It is highly likely that these types of temporal values can also occur in individual preferences. While conducting the focus groups, we used the organizational values scale to prompt responses on an individual level and it seemed to resonate well with the study participants. It will be important to modify this scale and adapt it for individual-level temporal value measurement and extend its utility to broader generational demographics.

It is also likely that preferences for a specific time orientation will correspond with the use of some specific types of ICTs. For example, instant messaging provides an ideal environment for people who enjoy communicating with others simultaneously—or near simultaneously—(Reinsch et al., 2008; Rennecker, Dennis, & Hansen, 2010). The current stream of research on multicommuting (Cameron & Webster, 2010; Reinsch et al., 2008; Turner & Reinsch, 2010) could benefit considerably by linking these three temporal value-driven task completion preferences with the frequency and quality of multicommuting. This communication practice-focused type of multitasking might have unique time consideration dimensions because multicommuting involves other people, potentially diverse audiences, and a need to react and adjust to meet the needs of others. It is also likely that people multicommutate differently if they use a sequential versus a simultaneous communication approach. Research also suggests that people often pair an oral and a written medium when communicating simultaneously (Turner & Reinsch, 2010) and sequentially (Stephens

& Rains, 2011) and these types of complementary ICT pairings in sequence have been shown to reduce overload perceptions and increase message persuasion (Stephens & Rains, 2011). It will be worth exploring if ICT preferences can be linked to an individual's temporal values and ultimately to an organization's temporal values.

Future work should also explore whether the increased pace perceptions and availability outside of work hours are desirable traits or not in the eyes of both individuals and employers. This is likely a complex question and it may differ with demographics other than Millennials. Past research suggests that Millennials find this blurring desirable (Twenge, 2010), yet it will take considerably more empirical evidence to substantiate this claim. If it can be substantiated, this could change our understanding of how and when people work from home and how they work from a fixed location. Some recent research on home/work environment and temporal values suggests that people have three different working patterns and that dovetailing is different from "strict polychronicity" (Kaufman-Scarborough, 2006, p. 68), referred to in this study as simultaneous polychronicity.

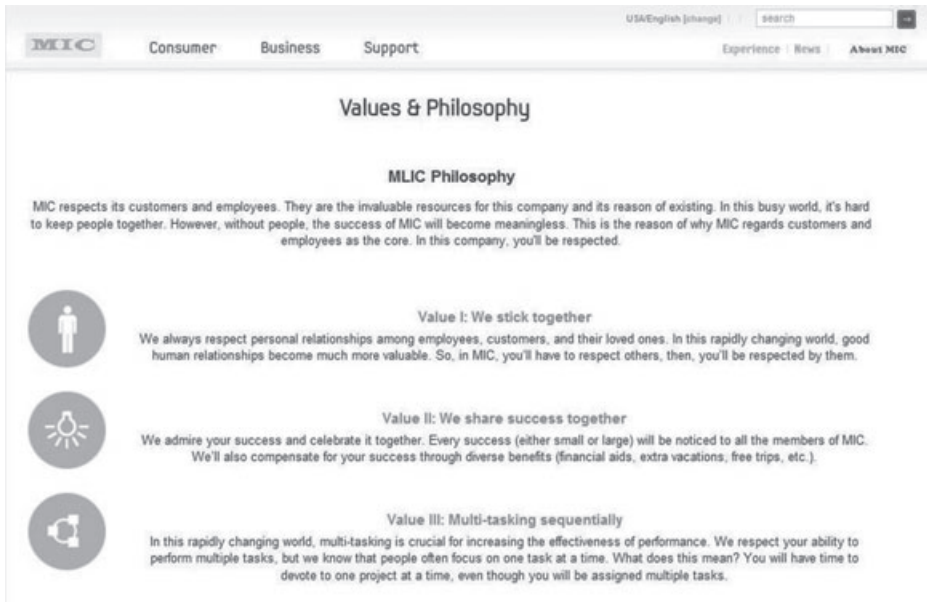
Finally, it will be important to explore the two different types of multitasking preferences in samples that are already in the workplace and represent generations beyond the Millennials. It is plausible that people from many generations with well-established practices for completing multiple tasks also have different multitasking preferences. The findings from this study might be extended to all generations, could influence peoples' perceptions of important workplace outcomes, and could be used to explain task-completion practice differences. Temporal values could have far reaching consequences, especially as organizational ICT use increases in complexity.

Conclusions

Multitasking practices historically have been examined from psychological perspectives. Communication scholars are ideally positioned to examine these types of practices theoretically and empirically by incorporating temporality, multicommuting, and differences between simultaneous and sequential actions. This study provides a theoretical extension to work on temporality and expands the measurement scale to consider differences between two types of multitasking: simultaneous and sequential. The empirical contribution demonstrates that temporal values can be related to pace and, in an organization that is relying heavily on simultaneous multitasking, people will feel an increased pace, work load, and a need to be available outside of work hours.

Acknowledgments

This project was funded by a University of Texas Department of Communication Studies Grant. We would like to thank the reviewers for their helpful feedback and Abby Heller for her comments during the creation of this study. An earlier version of this article was presented at the International Communication Association Conference, June 2010.



Appendix: Sample website used for the sequential/dovetailing experimental condition

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동시성, 연속성, 그리고 속도: 다업무완수에 관한 조직적 메시지들

요약

업무완성을 위한 작업장 규범들은 점증적으로 속도와 여러업무를 한꺼번에 수행하는 능력을 중시하고 있다. 본 연구는 이러한 이슈를 동시성, 연속성, 그리고 속도와 관련된 쟁점들을 시간할애분야의 전통에서 연구하는 것에 의해 논의 하였다. 궁극적으로, 우리는 복합시간행위, 똑 들어맞고 동시적으로 수행한 작업들에서의 문헌에서 연구된 2가지 업무 수행 전략을 고려하였다. 포커스 그룹과 실험적 발견들은 동시적이고 연속적인 멀티 테스트 업무 형태를 지지하였다. 추가적으로, 각자는 작업속도, 작업량, 그리고 작업시간의 접근성이 다른 개념들에 연계되었다. 개발된 측정 스케일은 멀티 테스크 업무개념에 대한 커뮤니케이션 중점의 이론적 기여를 제공하였다 이러한 발견들에 대한 함의와 미래 방향성들이 논의 되었다

La Simultaneidad, la Secuencialidad, y la Velocidad:

Los Mensajes Organizacionales sobre la Finalización de las Tareas Múltiples

Resumen

Las normas del lugar de trabajo para el finalización de tareas valoran cada vez más la velocidad y la habilidad de llevar a cabo tareas múltiples en forma simultánea. Este estudio sitúa este asunto popular de las multitareas dentro del contexto de la erudición sobre el uso del tiempo a través del tratamiento de los asuntos relacionados con la simultaneidad, la secuencialidad, y la velocidad. Últimamente, consideramos la finalización de las estrategias de 2 multitareas discutidas en la literatura del comportamiento policrónico, encajando (o realizando tareas en forma secuencial) y llevando a cabo tareas simultáneamente. Una entrevista de grupo y hallazgos experimentales apoyan la existencia de ambos simultáneamente y los estilos multitarea secuenciales. Adicionalmente, cada uno es vinculado con percepciones variadas sobre el ritmo del trabajo, la carga de trabajo, y la disponibilidad de las horas de trabajo. La escala de medida desarrollada ofrece una contribución teórica enfocada en la comunicación sobre los conceptos de la multitarea. Las implicancias de estos hallazgos y las direcciones futuras son discutidas también.

Palabras claves: Valores Temporales, Policronicidad, Multitarea, Finalización de Multitareas, Comunicación Organizacional, Ritmo, Temporalidad, Disponibilidad, Milenarias

Simultanéité, séquentialité et vitesse : les messages organisationnels portant sur l'achèvement de tâches multiples

Les normes d'entreprise portant sur l'achèvement des tâches tiennent de plus en plus à la vitesse et à la capacité d'accomplir plusieurs tâches à la fois. Cette étude situe la question généralisée du multitâche dans le contexte de la littérature chronémique, en traitant des enjeux connexes de la simultanéité, de la séquentialité et de la vitesse. Enfin, nous examinons deux stratégies d'achèvement de tâches multiples qui sont traitées dans la littérature sur le comportement polychronique, soit l'accomplissement séquentiel des tâches (*dovetailing*) et l'accomplissement simultané des tâches. Des groupes de discussion et des résultats tirés d'études expérimentales appuient l'existence des deux styles, simultané et séquentiel. De plus, chaque style est associé à des perceptions variées du rythme de travail, de la charge de travail et de la disponibilité en-dehors des heures de travail. L'échelle de mesure développée offre une contribution théorique communicationnelle aux concepts liés au multitâche. Les conséquences de ces résultats et des suggestions pour la recherche future sont aussi commentées.

Mots clés : valeurs temporelles, polychronicité, multitâche, achèvement de tâches multiples, communication organisationnelle, rythme, temporalité, disponibilité, génération Y

同时性，次序，和速度: 多重任务完成的组织信息

摘要

职场规则日趋强调工作速度及工作任务多重其下的重要性。从时间行为学的角度出发，本文探讨了有关多重任务处理的同時性，次序，和速度。本文分析了双重任务的完成策略，完成程序，和同步处理。小组讨论和实验结果都支持了有关同时性和次序的分析，且两种研究方法采用了不同的研究条件：工作步调，工作量，和非工作时间的可投入量。针对多重任务处理，本研究提出了对传播理论具有指导意义的测量方案，并对研究结果在实践中的应用和发展提出了建议。

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