

Running head: Polychronicity

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## Time for Reflection: A Critical Examination of Polychronicity

Cornelius J. König

Universität Zürich

Mary J. Waller

York University

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### Abstract

Both researchers and practitioners are increasing their attention to the multitasking demands of contemporary work contexts, and previous work suggests polychronicity plays a central role in the motivation of individuals to perform multiple tasks simultaneously. However, our detailed examination of existing literature reveals a wide range of conceptualizations and operationalizations of this construct, as well as incongruent results concerning the effects of polychronicity on behavior and performance. In this paper, we develop recommendations for defining and measuring polychronicity more precisely, we examine and compare existing work on predictors of polychronicity, and we address the equivocal relationship between polychronicity and performance. We conclude with implications for future research.

Keywords: polychronicity; multitasking; time perspective; review

### Time for Reflection: A Critical Examination of Polychronicity

For years, researchers largely ignored temporal issues in management and organizations (Ancona, Goodman, Lawrence, & Tushman, 2001; Bluedorn & Denhardt, 1988). This has changed. Researchers seem to have heard the call for more work on time, as evidenced by the many articles now focusing on temporal issues in pertinent academic journals. Within this literature, one particular concept has received a large amount of attention: *polychronicity*. Polychronicity can be understood as a preference for doing several tasks simultaneously, while monochronicity is the preference for working on tasks in a sequential manner (Hall, 1959).

One particularly interesting aspect of polychronicity is that the concept is remarkably accessible; it can be easily related to almost anyone's daily work. As Hecht and Allen remark: "Take a moment to think about yourself. Would you prefer, for example, to read this paper while completing other tasks? Or, would you prefer to read the paper from beginning to end and then move on to another task?" (2005, p. 155). In other words, even if readers have not thought about polychronicity, they have only to reflect on their own ways of working, multitasking, and multicomputing (Reinsch, Turner, & Tinsley, 2008) to understand what this concept means. Thus, it is not surprising that polychronicity has fascinated both researchers and managers around the world (Canada: Benabou, 1999; France: Conte, Rizzuto, & Steiner, 1999; Germany: König, Bühner, & Mürling, 2005; Hong Kong: e.g., Zhang, Goonetilleke, Plocher, & Liang, 2005; Netherlands: e.g., Kaplan & Waller, 2007; Peru: Espinoza, 1999; Singapore: W. Lee, Tan, & Hameed, 2005; Switzerland: König et al., 2005; US: e.g., Bluedorn, 2002), who have lauded polychronicity as a key individual difference for performance in contemporary organizations – for example, as an "important employee trait that has specific and clear relevance to the eclectic and fast-paced" work environment (Arndt, Arnold, & Landry, 2006, p. 320).

Unfortunately, polychronicity may not provide such a straightforward path to the quick-acting, ultra-efficient multitasking employee. In this review of the existing work on polychronicity, we offer a critical examination of three main issues. First, the exact definition of polychronicity is anything but clear. We review the development of the definition over time and, based on that review, suggest a more precise definition here, along with compatible suggestions for the measurement of the concept. Second, although culture has played a central role in theorizing about the antecedents of polychronicity, our review here of existing work leads us to suggest that antecedents other than culture may be more predictive and useful. Third, we examine the relationship between polychronicity and the field's most important outcome variable – performance – and suggest that person-environment or person-job fit may play a key, but often ignored, role in this relationship. To close, we offer conclusions with implications for future research on polychronicity; additionally, in order to aid critical analyses of constructs in other areas of inquiry, we offer a general template that summarizes our analysis approach.

### Defining Polychronicity

Defining polychronicity is a difficult task, and there are two reasons for this. First, much like a Venn diagram, several different and overlapping definitions of polychronicity have been developed over time, resulting not only in different theoretical conceptualizations but also in varying operationalizations of the construct. Second, key elements of these definitions need more precise explanations. In the following section, we detail the development of thinking about polychronicity and offer a concise definition of the concept.

#### *Changes in the Definition of Polychronicity*

The term “polychronicity” was first mentioned by anthropologist Edward T. Hall in his seminal book *The Silent Language* (1959). Hall was interested in the tacit dimensions of culture

– dimensions that are rarely made explicit but are powerful frames for the perception of events and people. His research led him to the identification of polychronicity as such a tacit cultural dimension. Hall defined the opposite pole of polychronicity, monochronicity, as “doing one thing at a time” (1959, p. 178). Thus, he focused on the *behavioral* aspect of polychronicity (cf. Slocombe, 1999), as have other researchers (e.g., Kaufman-Scarborough, 2006; Waller, 2000).

Later, Hall, in a published interview with Allen Bluedorn (1998), broadened the meaning of polychronicity in two ways. First, he changed the definition of polychronicity by adding an attitudinal element. He stated that “a polychronic culture is a culture in which people value, and hence practice, engaging in several activities and events at the same time” (Bluedorn, 1998, p. 110). This definition includes a behavioral element (i.e., multitasking behavior) and an element of evaluation as well as a causal link between the two: polychronic people *do* several activities at the same time and *value doing* this, and the assumed reason for doing so is the valuation.

Second, Hall subsumed several other phenomena under the concept of polychronicity (e.g., Hall & Hall, 1990). For example, he maintained that polychronic people are more relationship-oriented, have more elaborate information networks, have less regard for formal time constraints, and can be more easily interrupted than monochronic people. He also described high polychronic cultures as being “high context” (Hall in Bluedorn, 1998, p. 111; see also Palmer & Schoorman, 1999), meaning that in any communication, much has to be known about the context in order to understand what is being expressed. Furthermore, Hall assumed a polychronic culture to be time intangible, meaning that people in such cultures believe neither that “time is money” nor that time can be managed; rather, they see it “only as a backdrop against which events unfold” (Palmer & Schoorman, 1999, p. 325). However, even though these phenomena are often assumed to be part of the definition of polychronicity (see Gentry, Ko, &

Stoltman, 1991; Palmer & Schoorman, 1999), they may be better regarded as epiphenomena – as concepts that might be related to polychronicity but are not part of it. Such a conceptualization allows for empirically testing whether these phenomena are indeed related to polychronicity or not.

An additional change in the definition of polychronicity occurred in 1999 when Bluedorn, Kalliath, Strube, and Martin offered a new conceptualization. They defined polychronicity “as the extent to which people in a culture: (1) prefer to be engaged in two or more tasks or events simultaneously; and (2) believe their preference is the best way to do things” (p. 207). Two aspects of this definition are particularly noteworthy. First, polychronicity is explicitly defined as a cultural variable. This was already implicit in Hall’s earlier definitions (as his books focused on cross-cultural differences) but had not been made explicit. Second, this definition does not include any reference to actually doing things at the same time (i.e., multitasking behavior). Instead, the focus is on the individual’s preference and whether he or she generalizes this own preference to others. According to Bluedorn and colleagues, such a focus is consistent with standard definitions of culture that include value and belief attributes. Consequently, they refer to the questionnaire that they developed on the basis of this definition as the “Inventory of Polychronic Values” (IPV). Other scholars have also used this definition of polychronicity (e.g., Conte & Gintoft, 2005; Kaplan & Waller, 2007; König et al., 2005), and still other researchers have included only the preference aspect in their definition of polychronicity (e.g., Francis-Smythe & Robertson, 2003; Hecht & Allen, 2005; Kaufman-Scarborough & Lindquist, 1999; W. Lee et al., 2005).

Not surprisingly, there seems to be some confusion regarding what polychronicity means. To help achieve clarity in future work on the concept, we suggest the following recommendation:

*Recommendation 1: The term polychronicity should only be used to describe the preference for doing several things at the same time, whereas the behavioral aspect of polychronicity should be referred to as multitasking.*

Such a definitional separation of polychronicity and multitasking is consistent with the majority of the literature (as summarized by W. Lee et al., 2005), and avoids any assumption about the judgments of others by high-polychronicity individuals as included in the definition of Bluedorn and colleagues (1999). Furthermore, clearly differentiating a preference (i.e., polychronicity) from observable behavior (i.e., multitasking, see Spink, Cole, & Waller, 2008) is important because there is no theoretically necessary link between multitasking and preferring to do several things at a time. For example, some people might feel pressured by their environment to do several things at the same time without actually liking it (see Cotte & Ratneshwar, 1999). While the study of the *preference* to multitask and the *behavior* of multitasking are two extremely worthwhile endeavors -- particularly given the dynamic workloads faced by so many individuals in contemporary workplaces -- we mean to suggest here that researchers' use of consistent terms for preference (polychronicity) and behavior (multitasking) would help clarify this area of work.

We see two alternatives to our definitional suggestion; however, both have important drawbacks. One alternative would be to go back to the original definition suggested by Hall (1959) and to equate polychronicity with multitasking behavior. Unfortunately, this would cause even more confusion in the literature, as almost no research in the past has used this definition, making a link between previous research and research using this re-proposed definition fairly cumbersome. In addition, there would be two words (i.e., polychronicity and multitasking) for

the same phenomenon. Another alternative would be to stay with the definition by Bluedorn and colleagues (1999), which is very close to the one we suggest. However, Bluedorn et al.'s (1999) definition also includes the belief that one's preference is the best way to handle multiple tasks, which is an addendum that was not included by Hall (e.g., 1959), nor by other authors (e.g., Francis-Smythe & Robertson, 2003). Furthermore, Bluedorn et al.'s reason for adding this component to the definition was the conceptualization of polychronicity as a culture-driven variable – a conceptualization that is not completely consistent with the empirical literature so far, as we will show later. Thus, our definition seems more parsimonious and consistent with the literature than alternative definitions.

Our recommendation asks researchers to make explicit whether their arguments focus on multitasking behavior or on polychronicity preference, and to align their operationalizations appropriately to their theoretical arguments. This also applies to accuracy in wording. Existing work, for example, can be easily misunderstood when authors write that people “act [...] polychronically” (Bluedorn & Martin, 2008, p. 18) or use terminology such as “behavioral polychronicity” (Slocombe, 1999, p. 315). Additionally, although clarifying the definition of polychronicity may increase the clarity of future research on polychronicity, there remain two elements of the definition that require further clarification, which we address in the next section.

### *The Elements of Time and Task*

Expressions such as “one thing at a time” (Hall, 1959, p. 178) or “doing things at the same time” (this paper), or being “engaged in two or more tasks or events simultaneously” (Bluedorn et al., 1999, p. 207) necessarily elicit two questions: (a) What exactly is the “time”? (b) When is a task a task and not a subtask? A discussion of the definition of polychronicity would be incomplete without raising these two questions, as the definitions of these elements –



time and task – determine whether the preference for a specific behavior can be classified as monochronicity or polychronicity (cf. Waller, 2007). Similarly, the definitions of time and task are integral in the preferred behavior – monotasking or multitasking. The importance of the definitions reach beyond theoretical amusement; as we will describe, without clear definitions of these elements, research participants are quite likely to provide skewed responses based on very different interpretations. In general, establishing a common understanding (or frame of reference) among research participants reduces measurement error and increases validity in comparison to a research without a common frame (Bing, Whanger, Davison, & VanHook, 2004; Schmit, Ryan, Stierwalt, & Powell, 1995), and allows useful cross-study comparisons to be made. Thus, it is important to explore possible answers to these questions.

*What is the “time”?* If Taylor, Locke, Lee, and Gist (1984) report that researchers are more productive if they work on several projects at the same time (i.e., having started but not finished them), can this be understood as evidence for the beneficial side of polychronicity and multitasking (cf. Bluedorn, 2002; Frei, Racicot, & Travagline, 1999)? Conducting several research projects could mean that a researcher works on one project per week and switches back and forth among projects on a weekly basis. Would such switching behavior be called multitasking, and would the preference for such behavior be polychronicity? Similarly, multitasking behavior as studied by cognitive psychologists typically focuses on very simple tasks that require very fast switching, with time often measured in milliseconds. For example, Monsell, Sumner, and Waters (2003) used the following design. Participants were given a 50-millisecond preparation time and then a digit was presented to them. Participants had to classify the digit as either odd/even or as high/low. Their response immediately triggered the next preparation time of 50-millisecond and the presentation of the next digit to be classified using

either the same or a different classification rule -- in other words, with or without task switching. Given that such fast task switching rarely occurs in normal organizational settings, it is questionable if polychronicity researchers would call a preference for such multitasking behavior polychronicity. Thus, “at a time” in the study of polychronicity probably refers to a length of time somewhere between these two extremes.

We suggest that “at a time” should be defined explicitly by researchers and explained to participants in polychronicity research. The length of time defined in “at a time” should be context-specific and most likely should be one hour or less, given that recent work on contemporary organizational contexts suggests that, on average, individuals work for only 11 minutes on a single activity or task before being interrupted (Mark, González, & Harris, 2005). Sixty minutes or fewer would provide ample time for multitasking behavior under such conditions.

*What is a task?* Tasks can be identified at different levels (cf. Vallacher & Wegner, 1987). For example, the task of writing a letter in a foreign language might consist of several (sub-)tasks such as developing a structure on a notepad, searching for an appropriate translation of difficult words, asking a colleague for feedback, typing, printing, and sending it. Without a clear understanding of the separation of tasks and subtasks, writing a letter might be identified by some researchers as multitasking and not by others. However, following Waller’s (1997) conceptualization of group tasks and subtasks, an individual’s tasks could be construed as duties assigned to or assumed by an individual, the performance of which directly contribute to the attainment of an assigned goal. Conversely, subtasks could be construed as those actions leading to the completion of tasks. However, goal attainment may take weeks or months, and the tasks directly associated with them may span over longer periods of time that would normally be

associated with polychronicity or multitasking in organizational contexts. More recent grounded theory work has led González and Mark (2004; see also González & Mark, 2005, and Mark et al., 2005) to the development of the concept of *working spheres*. According to these researchers, a working sphere can be defined as “as a set of interrelated events, which share a common motive (or goal), involves the communication or interaction with a particular constellation of people, uses unique resources and has its own individual time framework” (González & Mark, 2004, p. 117). Thus, activities that are thematically connected are working spheres and individuals continuously switch from sphere to sphere during a working day. Importantly, a working sphere may cover only a short period of time (e.g., a computer programmer fixing a software component) or a much longer period (e.g., a computer programmer implementing a new software architecture at a client company). Based on Marks and colleagues’ detailed interviews and descriptions of information workers as they worked *in situ*, it seems likely that these working spheres are what individuals generally regard as “tasks” when explaining how they multitask throughout their workdays. Thus, a task could be construed as practical unit or sphere of work that contains thematically related activities.

To summarize, we offer the following recommendation for future research:

*Recommendation 2: Pursuant to the definition of polychronicity and multitasking, the time within which multiple tasks occur should be contextually-dependent and explicitly defined by researchers for research participants; similarly, a task should be explicitly defined and illustrated by researchers for research participants as a contextually-relevant unit of work containing thematically related activities.*

As explained above, such specification, when translated to research participant instructions, would ensure that all participants have the same frame of reference when responding to questions about polychronicity or multitasking, thus helping to avoid threats to measurement reliability from participants’ idiosyncratic interpretations of “time” and “task.”

*Measuring Polychronicity*

The ambiguity of the existing definitions of polychronicity is reflected in scales currently used by researchers to measure polychronicity. There are two standard questionnaires for measuring polychronicity: the Inventory of Polychronic Values (IPV, Bluedorn et al., 1999) and the Modified Polychronic Attitude Index 3 (MPAI3, Kaufman-Scarborough & Lindquist, 1999). The development of the IPV is described in Bluedorn et al. (1999), and the development of the MPAI3 can be traced through several publications (Kaufman, Lane, & Lindquist, 1991; Kaufman-Scarborough & Lindquist, 1999; Lindquist, Knieling, & Kaufman-Scarborough, 2001). Both scales have been used by researchers other than the original authors, in particular the IPV (IPV: e.g., Schell & Conte, 2008; Heinen, 2006; König et al., 2005; Payne & Philo, 2002), and the MPAI3 (or its predecessors) to a lesser extent (e.g., W. Lee et al., 2005; Zhang et al., 2005). Other scales (Francis-Smythe & Robertson, 1999; Gentry et al., 1991; Haase, Lee, & Banks, 1979) are not publicly accessible and therefore have not received much research attention. The developers of the MPAI3 have recently proposed an alternative measure (the Polychronic-Monochronic Tendency Scale PMTS, Lindquist & Kaufman-Scarborough, 2007) but to our knowledge, this measure has not yet been used by others. We focus here on the IPV and the MPAI3, both of which are reprinted in Table 1.

[Insert Table 1 about here]

For researchers who adopt the definition of polychronicity we offer here, use of the IPV requires that they omit the one item (item 4) that focuses on self-reported multitasking, not on polychronicity (see Li & Waller, 2008). Additionally, future IPV users should omit all items that refer to the belief that others should work in a multitasking style (items 3, 6, 7, and 8), as this belief is a definitional element not included in our (and in many other) definitions of

polychronicity. Omitting these items would reduce the IPV to a length of five items – a brevity that makes it an attractive measure for field research. For the same reasons, the second item of the MPAI3 should be omitted. However, reducing the length of questionnaires may hurt reliability (although calculating Cronbach's alpha with the suggested five-item version of the IPV resulted in an alpha of .80 and .77 when we reanalyzed two datasets).

### *Summary*

The proliferation of partially-overlapping definitions of polychronicity has contributed in part to what other researchers have described as a “Temporal Tower of Babel” in the field (Ancona, Goodman, Lawrence, & Tushman, 2001). What began as a definition focused on multitasking behavior slowly came to include a judgmental element and finally a preference for behavior. Ambiguous meanings of “time” and “task” have exacerbated the confusion and inability to compare results across studies. To aid in achieving clarity and consistency in the literature, we have derived two recommendations from the literature, one differentiating between polychronicity (the preference for multitasking) and multitasking (the behavior) and the other specifying meanings for time and task as elements in polychronicity and multitasking definitions. In the following section, we address the ambiguity associated with predictors of polychronicity, and suggest that antecedents other than culture may be more useful predictors of this preference.

### Predictors of Polychronicity

Regardless of the definitional issues associated with polychronicity, the breadth of existing literature on the topic should be sufficient to provide a clear view of the antecedents of polychronicity in organizational settings. However, much like the definition of polychronicity, ambiguity also permeates our knowledge concerning predictors of polychronicity. Much of this ambiguity is due to the original identification of polychronicity by Hall (1959) as an element of

culture – individuals’ cultural socialization and cultural values lead to a preference to multitask or not. This conceptualization has found many supporters (e.g., Brislin & Kim, 2003; Espinoza, 1999; Moustafa, Bhagat, & Babakus, 2005; Rose, Evaristo, & Straub, 2003; Ting-Toomey, 1999) and is the reason why Bluedorn and colleagues (1999) added one’s belief that multitasking is or is not the best option for task performance to their conceptualization of polychronicity. However, existing empirical evidence for the role of culture as a predictor of polychronicity is elusive. A summary of existing research on polychronicity among cultures is shown in Table 2.

[Insert Table 2 about here]

Based on this summary, the cultures studied so far do not seem to consistently differ in their polychronicity, bringing into question the assumed role of culture as a predictor of polychronicity. However, the evidence may not be conclusive until the appropriate methodological tools have been used to investigate the culture – polychronicity relationship. For example, to our knowledge, no published study has tested whether the questionnaires used to measure polychronicity are invariant across cultures. In other words, it is not clear whether people from different cultures understand a polychronicity questionnaire in a similar way, although such measurement invariance testing has been argued to be a prerequisite to testing mean differences between cultures (Vandenberg, 2002; Vandenberg & Lance, 2000).<sup>1</sup> Additionally, multilevel approaches such as the within and between analysis approach (WABA, cf. Dansereau, Cho, & Yammarino, 2006) or hierarchical linear modeling (cf. Raudenbush & Bryk, 2001) would allow researchers to empirically ascertain differences in polychronicity variance between culture and individual, indicating polychronicity variance both within cultures and across cultures.

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<sup>1</sup> Again, for such measurement invariance analyses it is important that the expressions like “at a time” and “a task” are consistently explained. If they are not, different interpretations of time and task across different cultures would seem fairly likely.

*Alternative Antecedents of Polychronicity*

Other existing work indicates that at least two other antecedents may reliably predict individuals' polychronicity levels: work environment and personality.

*Work environment.* In order to reach sufficient performance levels in a given work environment, individuals may be required to multitask, and those successful individuals who are "selected in" to such environments may be likely to develop a preference for multitasking, thus increasing their levels of polychronicity. This argument rests on two assumptions. The first assumption is that work environments differ in the required amount of multitasking, and the second assumption is that being driven or required to work in a multitasking way leads to developing a preference for multitasking (i.e., polychronicity). Support for the first assumption can be derived from studies of interruptions as triggers of multitasking (e.g., Carlson, 1951; González & Mark, 2005; Kurke & Aldrich, 1983; see also the review by Oshagbemi, 1995). In particular, Oshagbemi's review shows that interruptions characterize some but not all work environments, suggesting that there may be a substantial amount of variance in interruptions and consequent multitasking across work contexts. Support for the second assumption comes from cognitive dissonance theory (Festinger, 1957), which predicts that people experience discomfort when they engage in behaviors that conflict with one's beliefs or preferences. This discomfort can be reduced by modifying the preferences. In our case, this means that a person who is forced to work in multitasking way but who would prefer not to do so may change his or her preference, becoming more polychronic (see Conte et al., 1999, for a similar argument). However, this idea rests on the assumption that polychronicity can change – something not all polychronicity researchers believe (e.g., Cotte & Ratneshwar, 1999) and which may be in conflict with the fairly

high re-test reliabilities for polychronicity (e.g., .78 over a 2-month interval, Conte & Jacobs, 2003; see also Bluedorn, 2007; Bluedorn et al., 1999).

Empirically, the study by Hecht and Allen (2005) supports the view that the environment plays an important role in influencing polychronicity. The largest significant correlation between polychronicity and any other construct in their field study was between polychronicity and “polychronicity supplies.” The questionnaire items used by these researchers to measure polychronicity supplies included how often the job required multitasking behavior, suggesting that the more participants were required to multitask, the more they preferred to do so. Furthermore, if internal and external demands present within an organization require multitasking behavior from employees in order to sustain organizational viability, and if different organizations face unique sets of demands, then the levels of both individual polychronicity and multitasking across organizations should differ significantly (see Onken, 1999).

*Personality.* In addition to the influence of required multitasking behavior on polychronicity, several researchers have reported significant correlations between polychronicity and the Big Five personality traits. A summary of these results is depicted in Table 3.

[Insert Table 3 about here]

Polychronicity seems to be unrelated to neuroticism, openness, and agreeableness, and the evidence regarding conscientiousness is inconclusive. Interestingly, there seems to be a weak but consistent positive relationship between extraversion and polychronicity across five different studies. Conte and colleagues (Conte & Gintoft, 2005; Conte & Jacobs, 2003) explain this by referring back to Hall (1983), who described polychronic people as more relationship-oriented. This explanation is intriguing, but remains to be directly tested. Furthermore, Conte and colleagues (Conte et al., 1999) have argued that having a Type A behavior pattern (Friedman &



Rosenman, 1974) leads to polychronicity. People who exhibit Type A behavior pattern are characterized by traits such as impatience, aggressiveness, a sense of time urgency, and the desire to achieve recognition and advancement. Empirically, some small correlations between Type A behavior pattern (and/or its sub-dimensions) and polychronicity have been identified (Conte et al., 1999; Ishizaka, Marshall, & Conte, 2001).

*Cognitive capability.* In addition, researchers have examined cognitive capability as a predictor of polychronicity, but the empirical results have not yet shown a consistent picture of this relationship. König and colleagues (2005) argued that polychronic people might have a preference for working on several things at once because they have found themselves to be adept at multitasking; however, empirical evidence for this hypothesis is weak, with only one of four laboratory multitasking studies providing support. Whereas Zhang and colleagues (2005) found that polychronicity was related to fewer multitask errors committed, neither König and colleagues (2005) nor Ishizaka and colleagues (2001) nor Branscome and Grynovicki (2007) found a significant correlation between polychronicity and individual multitasking performance.

Similarly, polychronic people may have a preference for multitasking because they find it relatively easy due to their high general mental abilities. Again, the evidence for this idea is weak: Conte and Jacobs (2003) found a small positive relationship between polychronicity and mental abilities among train operators ( $r = .15$ ), but they also report slightly lower correlations between polychronicity and mental abilities among two students samples that were not significant. König and colleagues (2005) report a significant latent correlation between their mental abilities measure and polychronicity, but the manifest correlations between the three subtests of their mental abilities measure and polychronicity vary between negative, zero, and

positive. Thus, if there is a link between polychronicity and cognitive capabilities, it seems to be rather weak.

### *Summary*

Based on our review of the evidence, the role of culture as an antecedent of polychronicity may be overestimated. Instead, work environment requirements and personality (particularly extraversion) may play more direct roles in influencing individuals' levels of polychronicity and ultimately their multitasking behavior. The possibility of an interaction between individual and situation factors such as these in the development of polychronicity awaits empirical investigation. However, the lack of evidence regarding a culture-polychronicity link may be due to the possible confusion between preference (polychronicity) and behavior (multitasking) in some of the measures and conceptualizations previously used. Future research regarding this relationship may benefit from separating the two concepts and by employing other recommendations offered here.

### Polychronicity and Performance

Several researchers have investigated the relationship between polychronicity and individual performance, and a summary of this work can be found in Table 4. This table reveals a great extent of heterogeneity in the results. Some studies found a positive relationship (e.g., Conte & Gintoft, 2005; see also Onken, 1999, for a slightly positive relationship on the organizational level), some a negative relationship (e.g., Conte & Jacobs, 2003; see also Kaplan & Waller, 2007, for a negative relationship on the team level), and some no relationship at all (e.g., Payne & Philo, 2002).

[Insert Table 4 about here]

There are at least two possible sources of such heterogeneity. First, and as previously discussed, differences in results might be attributable to different frames of reference and interpretations by participants. Second, polychronicity might lead to higher levels of individual performance, but only for those individuals whose polychronicity levels “fit” or are appropriate for the environment or job. This person-environment fit argument has been raised by several authors (e.g., Bluedorn & Jaussi, 2007; Jansen & Kristof-Brown, 2005) and contains two corollaries: (1) neither polychronicity nor monochronicity is *per se* better for performance; and (2) polychronicity is better for performance only if the environment demands multitasking. In particular, jobs that have high multitasking requirements would benefit from polychronic employees, whereas other jobs would benefit from monochronic. In such case, there would be a person-job fit as a specific application of the more general person-environment fit.

Such a person-environment or person-job fit perspective may help explain why the relationship between polychronicity and performance or well-being is sometimes positive, sometimes negative and sometimes null. Although the notion of “fit” is intuitively appealing, researchers should not assume it to be a panacea for explaining contradictory results across studies. Empirical evidence supporting the fit hypothesis is an important target for future research, and two recent studies have paved the way for exploring this issue.

First, Slocombe and Bluedorn (1999) examined the fit individual- and team-level polychronicity. Using polynomial regression analysis and response surface methodology (see Edwards, 2002), Slocombe and Bluedorn found that the fit between the polychronicity of team members was significantly related to self-reported performance (as well as organizational commitment). Although team polychronicity may not necessarily be equivalent to environmentally-required multitasking, the relationship seems plausible.

Second, using creativity as a performance measure, Madjar and Oldham (2006) found that individuals with high levels of polychronicity generated more ideas when required to rotate through three tasks as compared to working sequentially on the three tasks. The opposite was true for more monochronic people, who generated more ideas if they worked sequentially. Madjar and Oldham have thus provided first evidence from the laboratory that that polychronic people perform better than others on tasks requiring multitasking. Future field work in this area should use objective data to verify the level of environmental multitasking demand (see Fleishman, Costanza, & Marshall-Mies, 1999).

Even though performance is undoubtedly the most important variable from an organizational perspective, future research should also examine the importance of the fit between individuals' polychronicity and the multitasking demands of the environment or job for other variables. A particularly interesting variable is job satisfaction because existing polychronicity work indicates that such person-environment fit matters for job satisfaction (Hecht & Allen, 2005), and also suggests that there might be a positive relationship between polychronicity and job satisfaction (see Table 5).

[Insert Table 5 about here]

In sum, showing that polychronicity matters – or, more likely, showing under what conditions it matters – will be a key task for future polychronicity research in terms of the use of the concept across multiple research topics. The person-environment and person-job fit perspectives offer a useful avenue for designing such research, and there is already some first evidence supporting it (Madjar & Oldham 2006; Slocombe & Bluedorn, 1999), although more work is needed.

## Discussion

In response to the call for more attention to time and temporal constructs in organizations literature, and as an effort to better understand the technology-enhanced multitasking contexts of contemporary organizations (see Reinsch et al., 2008), researchers are increasingly focusing on issues of tasks and time. While the increased interest in temporal aspects of behavior in organizations has added new perspectives to the literature, it has also resulted in a proliferation of temporal terminology (Kirton, Okhuysen, & Waller, 2004; Li & Waller, 2008). An exemplar of the confusion such proliferation has generated is the case of polychronicity.

As we outline in this paper, the confusion about polychronicity centers around three main issues: the definition of the construct, the focus on culture as the key antecedent, and the relationship of polychronicity with job performance. We hope that future research will benefit from our review in several ways. First, having a clear and synthesized definition will allow researchers to develop theoretical arguments without running the risk of confusing multitasking behavior with the preference for multitasking (i.e., polychronicity). For example, if researchers wish to investigate individuals' various multitasking behaviors or abilities, they cannot refer to polychronicity research as supporting evidence because this behavior is not what polychronicity (a preference) entails. Second, a clear definition implies that the operationalizations of polychronicity used in previous research cannot be used without changes. As we have explained, if existing polychronicity scales are not adapted, the item pool created by their use will not adequately measure the definition of the construct. Third, if the field indeed adopts one definition (a process we hope to have fostered), it will become much easier to compare results across studies and thus advance our understanding of polychronicity and its effects. Fourth, our review suggests that rather than studying polychronicity as a cultural variable (even though it is

historically rooted in the study of cultural differences), research interest in this area may also be invested in the study of the relationship between polychronicity and performance (or polychronicity and other important outcome variables).

Our review also offers implications that reach beyond polychronicity and the study of temporal aspects of organizations. Others may choose to use our analysis as a template in order to clarify construct definitions and thinking in other fields of inquiry that are also experiencing rapid proliferation of terminology. In general, relatively young fields of inquiry struggle with definitional and measurement issues (Kuhn, 1962); examples of such young fields might include areas of international business (DuBois & Reeb, 2000), green advertising (Zinkhan & Carlson, 1995), and corporate social responsibility (M.-D. P. Lee, 2008). Thus, we would suggest that by (1) carefully tracking the historical changes in conceptualizations of key constructs, (2) clarifying the meanings of integral core components of constructs, and (3) offering appropriate methods to measure the synthesized and clarified constructs, researchers in these and other young fields might be better able to help move knowledge in their fields forward.

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Table 1

*Polychronicity Questionnaire Items*

| Inventory of Polychronic Values (IPV, Bluedorn et al., 1999), individualized form                                | Modified Polychronic Attitude Index 3 (MPAI3, Lindquist et al., 2001)    |
|--|--|
| (1) I like to juggle several activities at the same time.  | (1) I like to juggle several activities at the same time.                |
| (2) I would rather complete an entire project every day than complete parts of several projects. (reverse coded) | (2) People should not try to do many activities at once. (reverse coded) |
| (3) I believe people should try to do many things at once.   | (3) I am comfortable doing several activities at the same time.          |
| (4) When I work by myself, I usually work on one project at a time. (reverse coded)                              |  |
| (5) I prefer to do one thing at a time. (reverse coded)  |  |
| (6) I believe people do their best work when they have many tasks to complete.                                   |  |
| (7) I believe it is best to complete one task before beginning another. (reverse coded)                          |  |
| (8) I believe it is best for people to be given several tasks and assignments to perform.                        |  |
| (9) I seldom like to work on more than a single task or assignment at the same time. (reverse coded)             |  |
| (10) I would rather complete parts of several projects every day than complete an entire project.                |  |

Table 2

*Cross-Cultural Studies on Polychronicity*

| Result  | Source                                      |
|---|---|
| No differences in polychronicity between ...  |   |
| ... Bulgarian, Chinese, Hungarian, Mexican, Polish, Ukrainian, and U.S. small business owners | Carraher, Scott, & Carraher, 2004           |
| ... French and U.S. students  | Conte et al., 1999                          |
| ... Anglo Americans and recent Latin American immigrants                                      | Cotte & Ratneshwar, 1999                    |
| ... India, U.S., and Venezuelan managers and white-collar workers in hospitals                | Moustafa et al., 2005                       |
| ... Japanese, German, and U.S. managers   | Tinsley, 1998, 2001                         |
| Significant differences between   |   |
| ... Japanese students studying in the U.S. and U.S. students                                  | Lindquist et al., 2001                      |
| ... Chinese and U.S. Americans  | Zhang, Goonetilleke, Plocher, & Liang, 2003 |

*Note.* A preliminary analysis of the Zhang et al. data set is presented in Plocher, Goonetilleke, Yan, and Liang (2002; according to Goonetilleke, personal communication, March 16<sup>th</sup>, 2007).

Table 3  
*Relationships between Polychronicity and Big Five Traits*

| Trait             | <i>r</i>             | <i>N</i> | Source                |
|-------------------|----------------------|----------|-----------------------|
| Conscientiousness | -.15*                | 181      | Conte & Jacobs, 2003  |
|                   | .14 <sup>#</sup>     | 174      | Conte & Gintoft, 2005 |
|                   | -.17 <sup>n.s.</sup> | 47       | Merkulova, 2007       |
|                   | -.10*                | 395      | Payne & Philo, 2002   |
| Extraversion      | .21**                | 181      | Conte & Jacobs, 2003  |
|                   | .22**                | 174      | Conte & Gintoft, 2005 |
|                   | .17 <sup>#</sup>     | 122      | König et al., 2005    |
|                   | .24 <sup>n.s.</sup>  | 47       | Merkulova, 2007       |
|                   | .14**                | 395      | Payne & Philo, 2002   |
| Neuroticism       | .05 <sup>n.s.</sup>  | 181      | Conte & Jacobs, 2003  |
|                   | -.03 <sup>n.s.</sup> | 174      | Conte & Gintoft, 2005 |
|                   | -.29 <sup>#</sup>    | 47       | Merkulova, 2007       |
|                   | .01 <sup>n.s.</sup>  | 395      | Payne & Philo, 2002   |
| Openness          | .07 <sup>n.s.</sup>  | 181      | Conte & Jacobs, 2003  |
|                   | .12 <sup>n.s.</sup>  | 174      | Conte & Gintoft, 2005 |
|                   | .11*                 | 395      | Payne & Philo, 2002   |
| Agreeableness     | -.07 <sup>n.s.</sup> | 181      | Conte & Jacobs, 2003  |
|                   | -.01 <sup>n.s.</sup> | 174      | Conte & Gintoft, 2005 |
|                   | .02 <sup>n.s.</sup>  | 395      | Payne & Philo, 2002   |

*Note.* <sup>#</sup>  $p < .10$ ; \*  $p < .05$ ; \*\*  $p < .01$ .

Table 4

*Relationship between Polychronicity and Performance*

| Source                                      | Performance aspect                                  | Participants                  | <i>r</i>                          | <i>N</i> |
|---|---|-------------------------------|-----------------------------------|----------|
| Arndt et al., 2006                          | Self-rated performance                              | Retail employees              | .17**                             | 313      |
| Bluedorn, 2007, Study 1, Sample 1           | Grade point average                                 | Students                      | .05 <sup>n.s.</sup>               | 450      |
| Bluedorn, 2007, Study 1, Sample 2           | Grade point average                                 | Students                      | .12*                              | 304      |
| Bluedorn, 2007, Study 3                     | Grade point average                                 | Students                      | .06 <sup>n.s.</sup>               | 349      |
| Chiu, Francesco, & Leung, 2004              | Self-rated performance                              | Managers                      | .14*                              | 250      |
| Conte et al., 1999                          | Grade point average                                 | Students                      | -.01 <sup>n.s.</sup>              | 161      |
| Conte & Gintoft, 2005                       | Supervisor performance ratings                      | Sales people                  | .23**                             | 174      |
| Conte & Jacobs, 2003                        | Supervisor performance ratings                      | Train operators               | -.17*                             | 181      |
| Harris & Wiggins, 2008                      | Simulated in-flight decision task                   | Pilots                        | -.17 <sup>n.s.</sup> <sup>a</sup> | 43       |
| Madjar & Oldham, 2006                       | Creativity in idea generation tasks rated by judges | Students in a lab experiment  | -.07 <sup>n.s.</sup>              | 224      |
| Nonis, Teng, & Ford, 2005                   | Self-rated performance                              | Working students in the U.S.  | -.17 <sup>n.s.</sup>              | 87       |
| Turner, Grube, Tinsley, Lee, & O'Pell, 2006 | Supervisor performance ratings                      | Working students in Sri Lanka | -.21*                             | 118      |
|   |   | Marketing employees           | -.01 <sup>n.s.</sup>              | 64       |
| Payne & Philo, 2002                         | Grade point average                                 | Students                      | -.00 <sup>n.s.</sup>              | 395      |

Note. #  $p < .10$ ; \*  $p < .05$ ; \*\*  $p < .01$ .

<sup>a</sup> averaged over three performance measures supplied by Wiggins (personal communication, December 15<sup>th</sup>, 2008)

Table 5  
*Relationship between the Polychronicity and Job Satisfaction*

| Source              | Participants                                      | <i>r</i>             | <i>N</i> |
|---------------------|---|----------------------|----------|
| Arndt et al., 2006  | Retail employees                                  | .39**                | 313      |
| Auerbach, 2002      | Working parents                                   | -.06 <sup>n.s.</sup> | 52       |
| Bluedorn, 2002      | Dentists  | .25 <sup>#a</sup>    | 44       |
| Hecht & Allen, 2005 | Alumni, faculty, and staff of two<br>universities | .11**                | 732-745  |
| Nonis et al., 2005  | Working students in the U.S.                      | .22*                 | 87       |
|                     | Working students in Sri Lanka                     | -.08 <sup>n.s.</sup> | 118      |

*Note.* <sup>#</sup>  $p < .10$ ; \*  $p < .05$ ; \*\*  $p < .01$ .

<sup>a</sup> computed on the basis of the path diagram reported on p. 282 of Bluedorn (2002).