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# A demands-resources model of work pressure in IT student task groups

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ABSTRACT

This paper presents an initial test of the group task demands-resources (GTD-R) model of group task performance among IT students. We theorize that demands and resources in group work influence formation of perceived group work pressure (GWP) and that heightened levels of GWP inhibit group task performance. A prior study identified 11 factors relating to the task, group, individual, or environment as source factors to GWP. We extended this research by creating and validating scales for each source factor within an integrated GWP instrument. We then applied the instrument in an initial test of the GTD-R model. Results show the GTD-R model provides good predictions of GWP and group task performance. In addition we find GWP, task complexity, and time pressure factors to be higher in IT tasks vs. non-IT tasks described by our student participants. The findings extend demands-resources research from its prior focus on job burnout and exhaustion in individual tasks to incorporate less-intense pressure levels and group task contexts.



## 1. Introduction

Work pressure contributes to a host of counter-productive problems in the workplace, including worker dissatisfaction (Carayon & Zijlstra, 1999; Weiss, 1983), fatigue (Macdonald, 2003), emotional exhaustion (Knudsen, Ducharme, & Roman, 2009), job burnout (Bakker, Demerouti, & Verbeke, 2004; Maslach, 1982; Maslach & Jackson, 1981; Maslach & Leiter, 2008), and absenteeism (Schaufeli, Bakker, & Van Rhenen, 2009). The information technology (IT) field in particular is characterized by high workloads and numerous stressors (Maudgalya, Wallace, Daraiseh, & Salem, 2006; Sethi, King, & Quick, 2004). Consequently, it is not surprising that work pressure and related factors have been found to decrease IT workers' performance by reducing output quality and job satisfaction (Ahituv, Igbaria, & Sella, 1998; Austin, 2001) and increasing exhaustion and turnover intentions (Guimaraes & Igbaria, 1992; Moore, 2000).

Although a large literature addresses work pressure, most studies focus on individuals working within a stable overarching organizational context, such as loan officers working at a retail bank's branch offices (Oliva, 2001). In contrast, IT work tends to be performed by groups rather than individuals (Jurison, 1999). Work pressures in task groups can produce outcomes that are quite different from individual task settings. For example Klein (1996a, 1996b) reports that work pressure disrupted cohesiveness and increased competitiveness within the task groups he studied, contradicting prior research among individual workers who were found to band together in the face of pressure (Lott & Lott, 1965). In addition, IT work tends to be characterized by dynamic organizational settings. IT projects emphasize production of one-time outputs within short time horizons, and IT project teams sustain frequent reorganization to meet project requirements (Mankin, Cohen, & Bikson, 1996).

IT undergraduate and graduate students frequently participate in group projects that are designed to simulate professional IT experiences (Richards, 2009). These student projects tend to be time-constrained and dynamic, and students frequently complain of pressures associated with group work (Richards, 2009), similar to their professional counterparts. Thus, it is not surprising that research finds IT courses place extra stress on students when compared to alternative business disciplines (Towell & Lauer, 2001).

A great deal of research has been directed toward understanding student group performance through applying models of collaborative learning (e.g., Aronson, 1978; Johnson & Johnson, 1975; Lave & Wenger, 1991; Sharan, 1990; Slavin, 1994) and in designing ways to improve performance (e.g., Richards, 2009; Sancho-Thomas, Fuentex-Fernández, & Fernández-Manjón, 2009). In addition, researchers have

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studied how group performance is influenced by a wide range of factors, including interaction structure, e.g., face-to-face vs. online interaction (van der Kleij, Lijkwan, Rasker, & De Dreau, 2009; Whitman, Malzahn, Chaparro, Russell, Langrall, & Mohler, 2005), team group work context (Wilson & Sheetz, 2008), individual characteristics (Wilson, 2000), and group characteristics, e.g., group cohesion (Forrester & Tashchian, 2004) and management role (Chapman & Van Auken, 2001).

Surprisingly, few studies have addressed the role of work pressure in student groups despite the recognition that the perception of pressure is common, particularly among IT students (Richards, 2009; Towell & Lauer, 2001). The limited research that has been conducted in this area does suggest that factors related to work pressure can influence performance in student groups. Time pressure has been shown to negatively influence both processes and performance in student groups (van der Kleij et al., 2009) while extrinsic rewards (Slavin, 1991), task cohesion (Bahli & Büyükkurt, 2005), and collective group efficacy (Hsu, Chen, Chiu, & Ju, 2007) have been found to improve group performance. These studies suggest that a broad array of source factors may impact performance in student groups, but since each study addresses distinct issues it is difficult to integrate the findings to predict the relative contribution of each factor to performance or to ascertain the degree to which contributions are shared among factors (i.e., the extent of multicollinearity among the factors). We observe that both concerns can be resolved by the approach we have taken in this paper of conducting research that investigates a comprehensive set of source factors that are important independent predictors of student group performance.

Our research extends a recent study which identified a substantial inventory of work pressure source factors that are potentially important within the context of IT student group tasks. Wilson and Sheetz (2009) conducted an open-ended survey among undergraduate and graduate IT student participants who drew from personal experience to identify factors that had contributed to the perception of pressure in a high-stress group task and factors that had mitigated pressure in a low-stress group task. A total of 581 distinct phrases generated from this survey were subsequently categorized within the 11 source factors described in Table 1.

Wilson and Sheetz (2009) propose that the source factors they identified are instrumental in promoting or mitigating *group work pressure* (GWP), defined as "perceived pressures relating to working in a group to perform a shared task". This paper describes the initial testing of the effects of these 11 source factors and GWP within a demands-resources research model. The following sections describe the model,

**Table 1**
GWP factors identified by Wilson and Sheetz (2009).

| Source factor | Operational definition | Supporting studies |
|---|---|---|
| Interpersonal conflict | Level of conflict, respect, and openness in interpersonal interactions among group members | Aladwani (2002), Sethi et al. (2004), and Weiss (1983) |
| Negative consequences | Expectation that a reprimand, punishment, or other negative impact would occur if task performance was unsuccessful | *Indirectly supported:* lack of contingent rewards reduces perceptions of accomplishment (Cordes, Dougherty, & Blum, 1997) |
| Task complexity | Task size, number of distinct components, and amount of detailed work entailed in completing the task | Abdel-Hamid and Madnick (1989), and Brown and Miller (2000) |
| Time pressure | Length of time allowed for task completion and flexibility of task deadlines | Abdel-Hamid and Madnick (1989), Ahituv et al. (1998), Austin (2001), Gogan et al. (1999), and Sethi et al. (2004) |
| Equity of work | Effort of group members toward completing their fair portion of the task and communicating regarding their task activities | *Indirectly supported:* research in social loafing suggests low equity of work reduces group performance (Karau & Williams, 1993) |
| External resources | Availability of help from outside the group, including human experts and information resources | Bakker et al. (2004); Cohen et al. (1996), and Demerouti et al. (2001) |
| Group expertise | Experience, knowledge, and skills of group members in performing task activities | *Indirectly supported:* group expertise increases group performance (Guinan et al., 1998; White & Leifer, 1986) |
| Group history | Prior experience of group members working together and expectation of future collaboration | *Indirectly supported:* group history decreases turnover intention (Lee, 2004) and increases group performance (Harrison, Mohammed, McGrath, Florey, & Vanderstoep, 2003) |
| Personal expertise | Experience, knowledge, and skills of the individual in performing task activities | *Indirectly supported:* personal expertise increases group performance (Jurison, 1999; White & Leifer, 1986) |
| Positive consequences | Expectation that a reward, praise, or other positive impact would occur if task performance was successful | *Indirectly supported:* rewards increase perceived quality of work life (Cohen et al., 1996) |
| Task motivation | Level of interest, fun, and other intrinsic aspects of the task that are motivating to group members | *Indirectly supported:* motivational tasks improve attitude in IT settings (Byrd, 1992; Gill, 1996) |