Mediating Influence of General Process Management Competency on the relationship between Task Inattentiveness and Self-Efficacy for Teamwork among Management Students

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Abstract

Purpose: This research study examines the mediating influence of general process management competency (GPMC) on the relationship between task inattentiveness (TIA) and self-efficacy for teamwork (SETW).

Design/methodology/approach: One hundred and sixty-four graduate management students completed self-assessment measures of TIA and SETW, and identified a close associate who completed an observer version of a general process management competency measure. Product moment correlations were used to examine the hypothesized relationships between SETW and both TIA and GPMC, and both the Hayes process and the Sobel test were used to test the hypothesis that GPMC mediates the relationship between TIA and SETW.

Findings: SETW was significantly correlated with both TIA ($r = -0.24$, $p < 0.01$) and GPMC ($r = 0.44$, $p < 0.01$). TIA was significantly correlated with GPMC ($r = -0.33$, $p < 0.01$). Both the Hayes process and Sobel test ($Z = -3.49$, $p < 0.00$) confirmed that GPMC fully mediated the relationship between TA and SETW.

Practical implications: Business and management educators need to be aware of the influence of task inattentiveness and general process management competency on self-efficacy for teamwork. Teaching strategies and other developmental resources that address task inattentiveness and promote general process management competency in an integrated manner may help improve self confidence in teamwork, which is a key contributor to team member effectiveness.

Originality/value: This is the first study to examine the relationships between TIA, GPMC and SETW. The results of this study highlight the importance of developing teaching strategies and developmental resources that enhance both task attentiveness and general process management competency in an integrated manner to promote greater confidence in ability to work in teams.

Keywords: Process Management; Process Management Competencies; Self-Efficacy for Teamwork; Self-Efficacy for Project Teams; Project Teams; Attention Deficit

Abbreviations: GPMC: General Process Management Competency; SETW: Self-Efficacy for Teamwork; TIA: Task Inattentiveness; GTIP: General Theory of Individual Performance

Introduction

Organizations are increasingly viewed as having multiple simultaneous forms including cultural, political, learning, mechanistic, organic, psychological and many others (Lederer, Knapp & Schott, 2017; Morgan, 2006; Scott & Davis, 2015).

Included within these varying points of view is the open systems perspective which has become the dominant overarching paradigm in the organizational sciences (Levasseur, 2004; Millet, 1998). The open systems perspective, which views organizations as a set of

evolving interactions both within and between organizational and environmental elements, has shifted attention from organizational elements to processes (Hernes, 2014; Langley & Tsoukas, 2010; Yoon & Kuchinke, 2005). Discrete entities, states, and events have dissolved into a network of processes which have dissolved into further processes (Rescher; 1996). The salience of the process perspective has been supported by significant business process improvement initiatives (Hammer & Champy, 1993), business process transformation arising from the integration of digital technologies (Vial, 2021), and the process focus of project and quality management (Dahlgaard, Khanji & Kristensen, 2008). This evolution in the perception of organizations has encouraged a reconfiguration of professional competencies resulting in the widespread inclusion of new competencies like systems thinking and process management (Batt et al., 2021; Davidz & Nightingale, 2008; Dolansky & Moore, 2013; Eicker et al., 2008; McGuire & Randall, 1998).

The emergence of systems and process-oriented competencies within the competency frameworks of a wide variety of business and non-business professions suggests that process-oriented competencies have both general (cross discipline) and context/task specific forms (Eicker, Kochbeck & Schuler, 2008; Gorbacheva et al., 2015; Lebid & Natal'Ya, 2020).

General process management competency, which is important for all business students and particularly management students who must be able to manage awide variety of processes (Coetzer, Omonuk & No, 2022; Seethamraju, 2012), has rapidly contextualized within specialized areas like business process management, quality management, risk management, operations management, information technology management, supply chain management and project management (Armistead & Machin, 1997; Chan, 2000; Biazzo & Bernardi, 2003; De Bruijn & Ten Heuvelhof, 2010). This has resulted in both a general and specialized orientation toward process management (Verino & Titko, 2019) which aligns with the general theory of individual performance (GTIP) [1]. The GTIP states that performance is predominantly the result of the interaction between motivation and competency moderated by influential role perceptions and situational contingencies [1-3], Sonnentag & Frese, 2002. Research on competency structures suggests that competencies often possess a pyramidal structure with general competencies toward the base and more context/task specific competencies toward the peak [3], Płoński, 2019. This suggests that performance is supported by multilevel competencies including both general and context/task specific competencies (Figure 1).
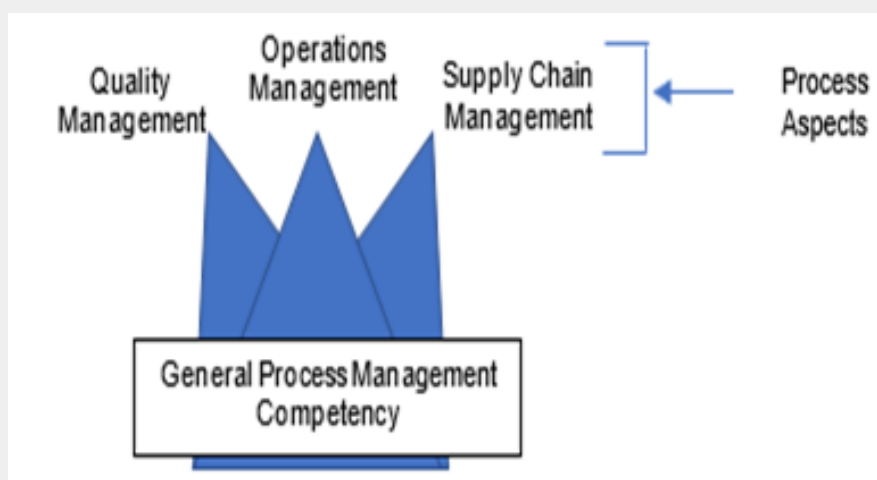

Figure 1: Pyramidal Nature of Competency Structure

The importance of general process management competency is underscored by the wide variety of professional associations that include the competency within their lists of required competencies (see example from the National Institute of Health in appendix A). Even though general process management competency is established as an important part of the professional competency pyramid (foundational component), there appears to be little research on the behavioral and performance consequences of the general level competency, particularly among management students where it is highly relevant (Coetzer, Omonuk & No,

2022; Mathiesen et al., 2013). Although process management receives specific attention within specialized areas of the business curriculum like supply chain management, information systems management and project management (Ahmad, Francis & Zairi, 2007; Pradabwong et al., 2017; Shtub & Karni, 2010; Thomas & Mengel, 2008), there is little evidence of explicit and widely adopted program content that targets the development of the competency at a general level for management students (Coetzer, Omonuk & No, 2022). The lack of research and curriculum content that addresses general process management competency among

management students constrains professional preparation. This research study helps to close the research gap by examining the influence of general process management competency within the nomological network that influences the performance of management students. More specifically, this research study examines the mediating influence of general process management competency on the relationship between task inattentiveness and self-efficacy for teamwork within the management student population.

Variables

Dependent Variable – Self-Efficacy for Teamwork

Social cognitive theory (Bandura, 1986) suggests that cognitive processing of social information can influence human performance. Beliefs about one's ability to mobilize sufficient effort, cognitive resources, and the behavioral strategies necessary for successful task completion, are important determinants of performance and satisfaction (Bandura, 1997). Self-efficacy is generally defined as the perceived capacity to perform tasks (Wood & Bandura, 1898), and is developed through mastery experiences, exposure to performance modeling, social persuasion, and judgements about performance readiness (Bandura, 1982; Gist, 1987). Positive or negative efficacy information is generated by evaluating task requirements, related personal experiences, and relevant personal and situational resources and constraints (Gist & Mitchell, 1992). Development and measurement of the self-efficacy construct has included global, domain, and task specific dimensions suggesting that efficacy assessments occur at different levels of specificity [4-6]. The inclusion of domain and task specific efficacy has given risen to numerous contextually oriented forms of efficacy, like efficacy for teaching [7], career decision making [6], smoking cessation [8] and teamwork (Chowdhury, Endres & Lanis, 2002; Phillips, 2001; Cohen and Bailey, 1997; Hyatt and Ruddy, 1996). Numerous studies have confirmed self-efficacy as a valid predictor of satisfaction, effort, persistence, and performance across a wide range of tasks Gist & Mitchell, 1992; Lennings, 1994, [9], Stajkovic & Luthans, 1998]. Meta-analysis of the efficacy-performance relationship suggests that efficacy is one of the better general predictors of performance [10,11].

Employers increasingly emphasize the need for business students to develop project and teamwork competencies [12,13]. Research conducted by Scribner, Baker & Howe [14] on working alumni perceptions of the value of student project teams suggests that team projects help to develop the confidence and competencies that support workplace performance and career advancement. It is therefore important that higher education business programs help students develop both the confidence and competence to manage and participate in teams. Research on efficacy in the team context has mostly aggregated team members general self-efficacy or efficacy beliefs about team performance as a measure of team efficacy (potency) [15]. Research suggests

that team efficacy is an important determinant of academic and organizational team performance [16,17], and a mediator of the team resources and performance relationship [18]. Research at the individual level on self-efficacy for teamwork has confirmed associations with team-member effectiveness and other important organizational behavior variables like role stress and conflict management style (Chowdhury, Endres & Lanis, 2002) [19-22]. Self-efficacy for teamwork (SETW) is a highly influential variable within the nomological network that determines team member performance, an increasingly important capability across a wide variety of professions [20].

Independent Variable – Task Inattentiveness (TIA)

Task inattentiveness refers to the inability and/or lack of motivation to direct and maintain cognitive activity on role and task relevant stimuli [23], which is generally required for efficient and effective role and task performance [24-26]. The capacity to focus on task relevant information over an extended period, which is both psychologically and physiologically demanding, is necessary for addressing complex tasks [27,28]. Attentiveness is comprised of multiple interacting systems that include arousal, selection (filtering), vigilance (sustained attention), control, and distraction resistance [29,30] (Di Nuovo & Smirni, 1994). The importance of attentiveness for performing complex cognitive tasks has produced considerable research on the performance implications of attention deficits among children, adolescents, and adults [31,32]. This research has resulted in the official recognition of high levels of attention deficit as a disorder [33].

Population studies of adults have confirmed that attention deficits constrain academic, professional, financial, and social performance [31,32,34]. Workplace research has confirmed that adult attention deficit is associated with reduced attendance, productivity, workplace safety and performance [31,32] (Kessler et al., 2009; Kessler et al., 2005; Reynolds, 1997; Weiss & Hechtman, 1993). Research by De Graaf et al., (2008) estimated] that attention related challenges cost the global economy approximately 144 million days of lost production per annum. Research on higher education students confirms that attention deficits are associated with learning disabilities [35], reduced academic performance and dropping out [36-38], difficulty with academic task management (Coetzer & Richmond, 2009) and lower levels of general self-efficacy and self-efficacy for teamwork [19,20].

Meditating Variable – General Process Management Competency (GPMC)

Competencies are defined as a set of abilities, knowledge, skills, perspectives, and attitudes that support solving problems and executing tasks in an efficient and effective manner (Holtkamp et al., 2015; Rychen & Salganik, 2001). General process management competency is defined as the cross-situational capacity to support the identification, modelling, analysis, development,

implementation, management, and improvement of the interrelated activities that produce systems outcomes in an efficient and effective manner. General process management competency supports a wide variety of tasks including task management, workflow management, business process management, quality management, and project management (Nowak, Pawlowski & Schellenbach, 2022). Execution of specialized processes within specific contexts (e.g., supply chain management) often requires supplementary and specialized process competency to achieve full context specific performance (Pradabwong et al., 2017; Shtub, & Karni, 2010). This is congruent with the pyramidal model of performance-supporting competencies that includes general competencies at the base and more task/situation specific competencies towards the peak [3] (Williams, et al., 2016).

General process management is increasingly viewed as an important competency within the modern workplace [39] (Lederer et al., 2017; Verina & Titko, 2019) and is listed as a core competency by a wide variety of business and non-business professional associations (e.g., Project Management Institute, National Institute of Health etc. – see example in Appendix A). Process management competency is supported by both declarative (descriptive) and procedural knowledge (Langley & Tsoukas, 2010). Declarative (descriptive) knowledge refers to understanding the general nature, presence, and role of process elements; whereas procedural knowledge refers to understanding the general nature of dynamic and temporal interrelationships among the elements, and how they influence systems outcomes (Banks & Millward, 2007).

General process management competency requires systems perspective-taking and thinking that supports the ability to imagine or examine a performance situation in a way that reveals the beginning-to-end interrelationships among elements of the situation that produce systems outcomes [39,40]. More specifically, general process management competency refers to the capacity to identify, map-out, organize, implement, manage, and improve both abstract and observable processes at a general level across a wide variety of performance situations and conditions (Galanakis, 2006; Jonker & Karapetrovic, 2004). Recent research by Coetzer, Omunuk and No (2022) confirmed associations between general process management competency and important organizational behavior variables like conflict management and team member performance. Research has also confirmed that both conceptual and procedural thinking competency have a positive influence on self-efficacy [41-43].

Hypothesis Development

The general proposition guiding this research is that SETW is negatively influenced by TIA and positively influenced by GPMC, TIA negatively influences GPMC, and GPMC mediates the relationship between TIA and SETW. Team members must pay attention to a variety of team conditions and activities to be informed and make productive contributions. Paying attention to team goals, distribution and co-coordination of team tasks, task management, relationship dynamics and conflicts, problem-solving, and other elements of the team, is necessary to understand the functioning of the team and feel confidence about successfully participating in the team. Team members who consistently experience challenges in paying attention to important tasks are likely to experience themselves as less informed and capable of consistently making productive contributions. This should lower their confidence in their ability to be an efficient and effective team member.

Hypothesis 1: Task inattentiveness is negatively associated with self-efficacy for teamwork. Identifying process elements and mapping out interrelationships between elements and outcomes in a comprehensive, organized, and dynamic manner, requires intensive and sustained attention to process relevant information supported by a guiding intellectual framework. Research on attention deficits has confirmed a disruptive influence on sensory and intellectual processes like information capture, modeling, planning, task deconstruction and sequencing [29,30]. This suggests that attention deficits are likely to disrupt the conceptual and procedural thinking required to develop general process management competencies.

Hypothesis 2: Task inattentiveness is negatively associated with general process management competency. Teamwork is a process intensive experience that requires the intellectual modelling, enactment, integration, and adjustment of both social and task related processes, particularly in project teams performing complex tasks. Team performance is dependent on the ability of team members to intellectually map out, describe, negotiate, implement, and adjust a wide variety of processes from goal setting through to performance assessment and adjustment. General process management competency supports constructive contribution to a variety of team processes which reinforces confidence in the ability to contribute to teamwork.

Hypothesis 3: General process management competency is positively associated with self-efficacy for teamwork. TIA influences both GPMC and SETW, and GPMC influences SETW, which suggests that GPMC mediates the relationship between GPMC and SETW. General process management competency requires the development and enactment of intellectual frameworks that assist in identifying and framing process elements and interrelationships in a comprehensive and organized manner. The development and use of such guiding frameworks which support the confidence of team members to make constructive contributions to a variety of team processes, is supported by the application of sufficiently intensive and sustained attention. This suggests that a significant component of the relationship between TIA and SETW is transmitted via GPMC.

Hypothesis 4: General process management competency will mediate the relationship between task inattentiveness and self-efficacy for teamwork.

Subjects and Methods

The subjects were 164 graduate management students attending a university in the United States. The average age of the subjects was 29.54 (low = 24, high = 48), and 52% identified as male and 48% identified as female. Each subject completed self-assessment measures of task attentiveness and self-efficacy for teamwork (focus on project teamwork). Each subject was also asked to identify someone who knew them well and would be willing to complete an honest assessment of their task and process management behavior. The identified observers completed an online observer version of a general process management competencies measure under conditions of anonymity and privacy (individual responses were not revealed to the subjects). Procedures recommended by Podsakoff et al. (2003) for addressing common method bias were used by administering the surveys at different times, using different scale formats (traditional Likert scale and behavioral frequency), generating psychological separation by associating measures with different components and activities within the course, and using a different source (observer) to measure one of the model variables.

Measures

Self-Efficacy for Teamwork (SETW). The instrument for measuring SETW was developed by amending a scale developed by Coetzer, Richmond [19] and used in multiple studies to examine the influence of individual level cognitive, emotional, and behavioral variables on general self-efficacy for teamwork [20,25,26,44]. Factor analysis of the scale has consistently generated a single factor with significant factor loadings [19].

The scale was developed to measure individual team member confidence in their ability to support:

i. setting team goals

ii. establishing and managing task execution processes

iii. identifying and addressing priority tasks in a timely manner

iv. creating a division of labor

v. integrating team member contributions

vi. constructive team member communication and relationships

vii. team motivation and timely performance

viii. assessing performance, solving problems, and resolving conflicts

ix. making useful direct contributions to the team's primary task (quantity and quality of contributions)

The measure contains 16 items, and both the instructions and questions were amended to focus on project teams. Example items are "I have the ability to coordinate the tasks and activities of team members in project teams," "I have the ability to energize and keep a team focused on completing key tasks in project teams," "I have the ability to build effective relationships with and between team members in project teams," and "I have the ability to contribute useful ideas and help a team complete key tasks in project teams." Items were measured on a seven-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = slightly disagree, 4 = neither agree nor disagree, 5 = slightly agree, 6 = agree, 7 = strongly agree). A total self-efficacy for teamwork score was derived by adding up the scores on each of the questions.

General process management competency (GPMC)

The scale developed by Coetzer, Omonuk and No (2022) was used for measuring general process management competency. This scale was developed after reviewing (1) descriptions of process management competency developed by a variety of professional associations including the Association of Business Process Management Professionals and the National Institute of Health, and (2) reviewing recent research on process management and related competencies [45-47]. Research confirmed the unitary factor structure of the measure (long and short form) and (2) associations with important organizational behavior variables like conflict management and team member effectiveness (Coetzer, Omonuk & No, 2022). For this research study, an observer version of the short form of the scale was used to provide additional protection against single source bias. Use of an observer version was appropriate because each of the questions referenced observable behavior. Each research subject was asked to identify someone who was willing to provide an honest assessment of the way the subject managed important and complex processes. Example items include – (the person being observed) manages important and complex processes by "explicitly developing a sufficiently detailed breakdown of the beginning-to-end process into the key steps and sub-steps," "explicitly identifying, reviewing, and adjusting (when necessary) the key steps to ensure that the process produces the intended outcome," "explicitly identifying, reviewing, and adjusting (when necessary) the key steps to ensure that the process is executed in a timely and cost-effective manner," and "explicitly identifying, sequencing, and organizing all the key process steps into an integrated map of the process." Items were measured on a seven-point Likert behavioral frequency scale (1 = never, 4 = sometimes, 7 = always). The total score for general process management competency was derived by adding up the scores on each of the questions.

Task Inattentiveness (TIA)

Task inattentiveness was measured using the component of the Brown Adult Attention Deficit Scale (Brown, 1996, 2001) that measures difficulty sustaining attention and concentration. The instrument was designed and validated for use with adults

18 years and older, and measures the following five cognitive conditions associated with adult attention deficit (each is a validated factor) (Brown, 1996, 2001):

i. difficulty activating and organizing to work.

ii. difficulty sustaining attention and concentration.

iii. difficulty sustaining energy and effort.

iv. difficult managing emotional interference.

v. difficulty utilizing working memory and accessing/recalling learned material.

The Brown (1996/2001) scale uses progressive dimensional (gradations of severity) as opposed categorical (non-disordered vs disordered) measurement of the symptom clusters, which is consistent with the evidence that adult attention deficit symptoms and associated impairment falls along a severity continuum [48,49]. Numerous research studies have made use of the Brown scale to conduct dimensional measurement and correlation-based analysis of the influence of attention challenges within nomological networks that influence behavior and performance in organizations [20,50,51].

The component of the Brown scale that measures difficulty sustaining attention and concentration contains 8 items, some of which were amended to ensure that each question focused on attention challenges related to performing important tasks (as opposed to general attention challenges). Example items include

"I listen and try to pay attention when addressing important tasks, but my mind often drifts and I miss out on desired information," "I'm easily sidetracked when performing important tasks, and will often switch to doing something else," "when addressing important tasks, I remember some of the details but often have difficulty understanding the entire task." The instrument uses a four-point behavioral frequency scale (0=never, 1=once a week, 2=twice a week, 3=almost daily) to rate the frequency with which the behavior occurs. A total task attention score was derived by adding up the scores on each of the questions.

Results

Descriptives

Means, standard deviations and correlations among the research variables are reported in Table 1. All variable distributions are approximately normal and demonstrate reasonable variability across their respective scales. Cronbach alpha coefficients ranged from 0.85 to 0.95 suggesting good internal reliability. No univariate or bivariate outliers were considered problematic and product moment correlations revealed significant associations between the relevant variables. The distribution of regression residuals produced by the mediation regression was approximately normal with no problematic outliers. The regression coefficients for the control variables of age and gender were $\beta = -0.02$ ($p = 0.77$) and $\beta = 0.06$ ($p = 0.37$) respectively suggesting that neither had significant influence within the mediation model.

Table 1: Means, Standard Deviations, Internal Reliabilities and Correlations.

		Mean	SD	1	2	3	4
1	Self-efficacy for Teamwork	89.72	12.36	0.95			
2	Task Attention	13.49	5.27	-0.24**	0.85		
3	General Process Management Competency	64.92	13.25	0.44**	-0.33**	0.92	
4	Age	29.54	3.62	0.08	-0.12	0.04	
5	Gender			-0.03	-0.07	-0.1	0.12

Notes: Internal consistency reliabilities are shown in parentheses on the diagonal
* = p < 0.05 (2-tailed), ** = p < 0.01 (2-tailed)

Empirical Tests of Hypotheses

The significant threshold for all the empirical tests was set to $\alpha = 0.05$ (2-tailed). The correlation between task inattentiveness and self-efficacy for teamwork is statistically significant ($r = -0.24$, $p < 0.01$) providing support for the hypothesis that lack of task attention is negatively associated with self-efficacy for teamwork. The correlation between general process management competence and self-efficacy for teamwork is statistically significant ($r = 0.44$, $p < 0.01$) providing support for the hypothesis that general process management competency is positively associated with

self-efficacy for teamwork. The Sobel test for mediation is statistically significant ($Z = -3.49$, $p = 0.00$) and the Hayes bias corrected bootstrap confidence interval (BootLLCI = -0.512 and BootUCLI = -0.127; $\alpha = 0.95$) does not contain zero suggesting the presence of mediation. The mediation results suggest that a statistically significant proportion of the reduced self-efficacy for teamwork associated with the lack of task attentiveness is the result of task attentiveness constraints on general process management competency (Figure 2). A non-significant partial correlation between TIA and SEPTW ($r = -0.09$, $p < 0.24$) after the mediator (GPMC) is included in the model suggests full mediation.
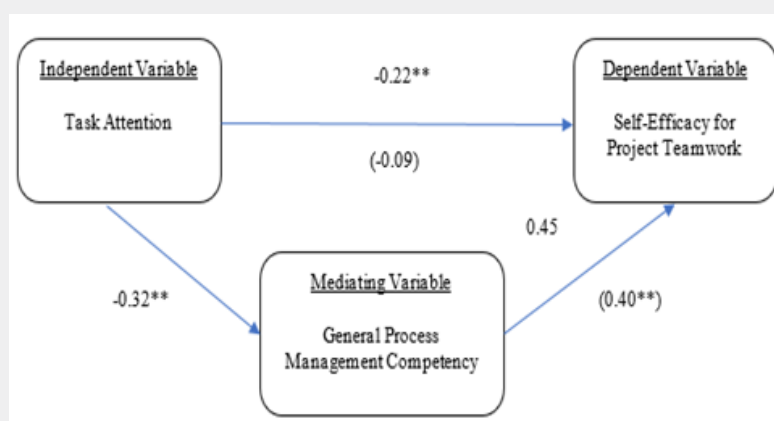
Figure 2: Mediating Influence of General Process Management Competency on the relationship between Task Attention and Self-Efficacy for Project Teamwork.

Notes: Type of mediation: Full. Hayes bias corrected bootstrap confidence interval (BootLLCI = -0.512 and BootUCLI = -0.127; α = 0.95). Sobel Z-value = -3.497, p = 0.00. Direct influence = -0.09, Indirect influence = -0.134. Correlations in parentheses indicate β weights computed after the mediator has been included in the regression equation. * = $p < 0.05$, ** = $p < 0.01$. All calculations conducted with the control variables of age and gender included in the model.

Discussion

The results suggest that TIA is negatively associated with GPMC and SETW, GPMC is positively associated with SETW, and GPMC fully mediates the relationship between TIA and SETW. The directionality of this relationship cannot be confirmed from this research study and both opposite and bi-directional effects are possible. Numerous studies support the front-end temporal or causal position of attentiveness challenges due to genetic and early developmental origins [29], and the general need for attentiveness as a precondition for learning and competency development [30]. However, some research suggests that current contextual conditions may help to manifest a genetic predisposition or strengthen existing lack of attentiveness symptoms [52]. Research confirming the contribution of mastery experiences and the experience of performance readiness to efficacy development supports placing general process management competency prior to efficacy [16,17]. The placement of inattentiveness prior to process competency which is placed prior to efficacy is supported by the above-mentioned research.

Implications for Organizations and Academic Institutions

Concerns continue to be expressed about higher education business programs producing graduates who do not possess the competencies required to perform within the modern workplace [53], especially in key task execution configurations like teams and projects [54]. Lack of student attentiveness is frequently reported as an impediment to learning and competency development, and research has confirmed that teaching strategies can influence both attentiveness [55] and competency acquisition [56]. This research study suggests that the enhancement of task attentiveness and general process management competency in an integrated manner among management students will positively reinforce confidence in the ability to work in teams [57-60]. Research has confirmed that self-efficacy for teamwork is a key contributor to team member effectiveness, which is a key capability within the modern workplace [61-65]. Program content, teaching strategies, and other development resources that assist students in developing attentional capacity and general process management competency in an integrated manner should contribute toward students being more confident, efficient, and effective team members [66-71].

Future Research and Conclusion

Understanding the inter-relationships between task attentiveness, general process management competency, and self-efficacy for teamwork within the higher education student population requires the use of varied student samples (e.g., across majors, undergraduate vs graduate etc.) combined with potential moderators (e.g., support elements in both personal and university context that influence the relationships). This may help to better specify the nomological network linking task attentiveness and process management competency to efficacy and help produce more useful interventions. In conclusion, the results of this study suggest that general process management competency mediates the relationship between task inattentiveness and self-efficacy for teamwork. This supports the use of teaching and development strategies, resources and activities that enhance task attentiveness and process management competency in an integrated manner, which should produce more confident, efficient, and effective team members.

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