Metacognitive Strategies and Discipline and Self-Control among College Students: A Multi-trait, Multi-method Analysis

Hanzen M. Reyes[1]
Pamantasan ng Cabuyao[1]

Abstract – This study focused on the multi-trait, multi-method examination of metacognitive strategies and discipline and self-control and the three contexts: (a) family, (b) school, and (c) community. The research objective of this study was to investigate whether students evaluate their decision making and problem solving strategies and plan and regulate actions differently in contexts such as family, school and community. The sample for this study comprised 198 college students recruited from one public university and two private universities at Metro Manila. In the MTMM analysis of this study, the correlations between the monotrait-heteromethod (domains) is relatively high, suggesting that regardless of contexts (domains), the trait values are consistent. This result may indicate that the measures are not specific to the context of family, school, and community. Apart from family, school, and community contexts, one recommendation is to use peer and workplace contexts to examine if students will decide on the proper course of action and prioritize tasks to achieve their desired end in mingling with friends or in work responsibilities differently in such contexts. Also, to further expound in determining the extent in which the youth accept and are aware of the roles they play and the tasks they perform in the context of development, self- efficacy for roles and tasks could be added to the variable. This is to investigate if college students perceive that they are confident in their ability to successfully plan and having a sense of whether their plans and strategies are working in attaining their goals differently in family, school, and community contexts.

Keywords – discipline, metacognitive strategies, self-control

INTRODUCTION

Metacognitive strategies and discipline and self- control are generally considered important in achieving one's goals (Magno, 2008; Zimmerman & Kitsantas, 2014). These are necessary in attaining one's objectives in the family, school, and community (Bernardo, 2003; MacKenzie et al., 2012; Oettingen & Gollwitzer, 2015; Sta. Maria et al., 2009). Because family, school, and community are different contexts, a multi-trait, multi-method analysis would clarify if the metacognitive strategies and discipline and self-control are similar across the said contexts. Using the Social–cognitive theory (Bandura, 2001) as framework, I argue that students evaluate their decision making and problem-solving strategies and plan and regulate actions in the same way across contexts. Consequently, I hypothesized that metacognitive strategies and discipline and self-control are related with each other and are similar in different contexts such as family, school, and community.

Studies have consistently demonstrated the role of metacognition and regulation in both academic and non-academic context (O'Leary & Sloutsky, 2019). Furthermore, Flavell (1979) defined metacognition as cognition of cognition that serves two basic functions,

namely, the monitoring and control of cognition. It involves strategies such as planning, thinking of better ways of doing things, allocating enough time to different activities, thinking possible solution to difficult problems, thinking possible consequences of different actions, learning from one's mistakes, and contemplating alternative plans if the current plan fails. All these metacognitive strategies are essential in different contexts such as family, school, and community.

On the other hand, Duckworth and Seligman (2006) defined self-discipline as ''the ability to control prepotent responses in the service of a higher goal and further specifying that such a choice is not automatic but rather requires conscious effort''. Self-discipline is similar to the notion of effortful control, which Rothbart and Bates (1998) defined ''as the ability to inhibit a dominant response to perform a subdominant response''. That is, self-discipline enables learners to control their present performance in order to attain greater satisfaction. Discipline and self-control is prioritizing and doing important tasks first, following what is right even if it is difficult, getting work done even if one is exhausted, and not easily get distracted when doing something important. These are important

manifestations of discipline and self-control in family and school. Moreover, discipline and self-control in the community is avoiding indulging vices and persevering on tasks even when results are not fast in coming.

Furthermore, social–cognitive theory (Bandura, 2001) was used to argue that metacognitive strategies and discipline and self-control are related with each other and are similar across different contexts such as family, school, and community. The social–cognitive theory states that self-regulation is described as one's feelings, thoughts, and behaviors and the ability to accurately plan in order to achieve goals, which is related to metacognition. Hence, individuals will continually adhere to do certain tasks in order to deliberately achieve their goals in life.

Developmental experiences in the family, school and community contexts set the stage for the emergence of self-regulation. The conditions that promote self-regulation should be studied if the family, school and community were to remain meaningful in determining youth positive development (Burton & Jarret, 2000). This is essential in a culture that depends primarily on the family, school and community as agencies for preparing youth to become productive members of society. By prescribing values and stipulating demands, on one hand, and by providing supportive guidance, on the other, the family, school and community enable the Filipino youth to monitor and adjust their own behaviors in line with the contextual standards and demands (Sta. Maria et al., 2009).

OBJECTIVES OF THE STUDY

The current research focused on the multi-trait, multi-method examination of metacognitive strategies and discipline and self-control and the three contexts: (a) family, (b) school, and (c) community. The research objective of this study was to investigate whether students evaluate their decision making and problem-solving strategies and plan and regulate actions differently in contexts such as family, school and community. Informed by the social–cognitive theory as framework, I hypothesized that both metacognitive strategies and discipline and self-control is similar (domain general) across different contexts such as family, school, and community.

MATERIALS AND METHODS

Participants

The sample for this study comprised 198 college students recruited from one public university and two private universities at Metro Manila. The respondents had a mean age of 19, ranging from 17 to 22 (SD = 4.03). 68% of the participants were females and 32% were males. Also, 31% of the population came from Adamson University, 47% from Far Eastern University, and the remaining 22% from Pamantasan ng Lungsod ng Maynila. College students were selected because they are predisposed to risky behavior and different mental health issues. Also, they are mindful of their capabilities and weaknesses, and they tend to evaluate their problem- solving and decision making strategies. They regulate and control their actions with seriousness and patience in order to attain their goals in life. Moreover, the survey was conducted in Metro Manila because youths have the capacity to explore their maximum potentialities through diverse activities.

Materials

Selected scales of the Multi-context Assessment Battery of Youth Development (MAB-YD) were administered (Reyes, Garo-Santiago, Sta. Maria, & DLSU-PSYCH, 2011). This was constructed for the Youth Development Research Project of DLSU-PSYCH and has been pretested with college sample. The MAB-YD enables the comparison of different contexts of development in terms of the goal orientation strategies and the extent of self-regulation the youth's exercise.

Items were written in both English and Filipino translations. The metacognitive strategies scales were updating plans and mental stimulation and the discipline and self-control scales were discipline and lack of discipline. The said subscales are the factors generated from the factor analysis done for metacognitive strategies and discipline and self-control scales using the pilot data. The number of items for metacognitive strategies and discipline and self-control were 9 and 12, respectively. The scales' Cronbach alphas computed from the respondents were .89 and .79; average item-total correlation, .65 and .56; and average factor loading, .73 and .70.

To answer the set of items for each scale, a 5-point Likert scale was utilized (1: not all true to 5: very true). Some items were reversed- scored and the

student's mean rating for each items in every subscales comprises the student's score for that subscale.

Procedures

Permission for the administration of the scales was obtained from the university officials and from the members of the faculty whose classes the respondents were recruited. Participants from Adamson University, Pamantasan ng Lungsod ng Maynila, and Far Eastern University were provided with hard and digital copies of the instrument for reproduction. Moreover, through the instruction of the principal researchers, the research team of the said universities arranged for the administration of the instrument for their students. Both Filipino and English versions of the items were given with the Filipino translation italicized and below the English version. The measure was self-administered, and paper based. The participants answered the survey in their respective campuses after the objective of the study was explicated.

RESULTS AND DISCUSSION

Table 1 shows preliminary analysis of means and standard deviations of metacognitive strategies and discipline and self-control in family, school, and community contexts. The exercise of the metacognitive strategies of the college students fell on average in the family ($M = 4.08$, $SD = 0.49$), school ($M = 4.06$, $SD = 0.51$), and community ($M = 3.76$, $SD = 0.66$) contexts. The exercise of discipline and self-control of the students also fell on the average in the family ($M = 3.58$, $SD = 0.53$), school ($M = 3.52$, $SD = 0.49$), and community ($M = 3.62$, $SD = 0.52$) contexts.

Table 1. *Means and Standard Deviation of Measures*

Measure	M	SD
Metacognitive Strategies (Family)	4.08	0.49
Discipline and Self-Control (Family)	3.58	0.53
Metacognitive Strategies (School)	4.06	0.51
Discipline and Self-Control (School)	3.52	0.49
Metacognitive Strategies (Community)	3.76	0.66
Discipline and Self-Control(Community)	3.62	0.52

The heterotrait-monomethod, monotrait-heteromethod, and heterotrait-heteromethod correlations are presented in Table 1. Correlations concerning the same trait that are measured in different domains (monotrait- heteromethod) are of medium size, averaging 0.66, 0.67, and 0.60 for family, school, and community, respectively. Correlations including different traits but measured within the same domain

(heterotrait- monomethod), which average 0.59 and range from 0.57 to 0.61, are much closer in values, and are also on the medium size correlation. The correlations concerning different traits measured in different domains (heterotrait- heteromethod), has an average of 0.53 and range from 0.47 to 0.59 are also of medium size.

In order to further investigate on the statistical soundness of the multitrait-multimethod matrix, the factor structure for each domain was extracted. The model using three factors (domains) shows a relatively larger family domain factor than under school and community domain, with average of .49, .46, and .43 respectively. The model shows a poor fit [*AGFI=.41, χ2 (6) =164.25*].

Table 2. *Correlations among Metacognitive Strategies and Discipline and Self-Control in Family, School, and Community Contexts*

Scale	Metacognitive Strategies (Family)	Discipline and Self-Control (Family)	Metacognitive Strategies (School)	Discipline and Self-Control (School)	Metacognitive Strategies (Community)	Discipline and Self-Control (Community)
Metacognitive Strategies (Family)	-	**0.61**	<u>0.70</u>	*0.59*	<u>0.57</u>	*0.56*
Discipline and Self-Control (Family)	**0.61**	-	*0.55*	<u>0.76</u>	*0.49*	<u>0.61</u>
Metacognitive Strategies (School)	<u>0.70</u>	*0.55*	-	**0.60**	<u>0.57</u>	*0.51*
Discipline and Self-Control (School)	*0.59*	<u>0.76</u>	**0.60**	-	*0.47*	<u>0.66</u>
Metacognitive Strategies (Community)	<u>0.57</u>	*0.49*	<u>0.57</u>	*0.47*	-	**0.57**
Discipline and Self-Control (Community)	*0.56*	<u>0.61</u>	*0.51*	<u>0.66</u>	**0.57**	-

Note: All correlations are significantly different from zero at p < .05. Values in bold are heterotrait-monomethod correlations; underlined values are monotrait-heteromethod correlations; the italicized values are heterotrait-heteromethod correlations.

Table 3 presents the estimated standardized effects of corresponding trait and domain latent factors on metacognitive strategies and discipline and self-control in different contexts. It shows that trait-latent factors has significant effect on family, school, and community contexts. This suggests that the exercise of metacognitive strategies and discipline and self-control is the same across different contexts (e.g., family, school, and community).

Table 3. *Estimated Standard Effects (and Standard Errors) of Corresponding Trait and Domain Latent Factors on the MAB Scales*

Scale (Trait)	Domain (Contexts)		
	Family	School	Community
Metacognitive Strategies	.41 (.03)	.42 (.03)	.44 (.04)
Discipline and Self-Control	.45 (.03)	.43 (.03)	.39 (.03)

Note: All the above effects are significantly different from zero at p < .05.

A three factor (domains) model was tested. The two measures—metacognitive strategies, and discipline and self-control—were assigned into family, school and community contexts. The correlations among measures are in Table 2. The correlation for monotrait-heteromethod: metacognitive strategies are .70, .57, .57 for family, school, and community, respectively; and discipline and self-control are .76, .66, and .66 for family, school, and community, respectively. Moreover, the heterotrait-monomethod correlations: metacognitive strategies are .61, .60, and .57 for family, school, and community, respectively; and discipline and self-control are .61, .60, and .57 for family, school, and community, respectively. On the other hand, the correlation for heterotrait -heteromethod: metacognitive strategies are .59, .51, .49 for family, school, and community, respectively; and discipline and self-control are .49, .47, and .56 for family, school, and community, respectively.
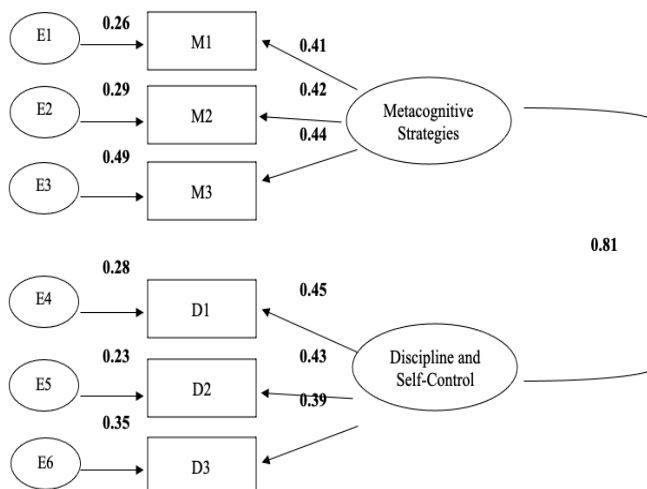

Figure 1: *The path-analytic model for family, school, and community. All coefficients are significantly different from zero at p < .05. Standard errors range from .03 to .05.*

DISCUSSION

The present research aimed to determine whether metacognitive strategies and discipline and self-control is similar across different contexts (domain-general) (e.g. family, school, and community). Its aims to investigate whether students evaluate their decision making and problem solving strategies and plan and regulate actions differently in contexts such as family, school, and community.

The current study has limitations that requires the use of attention when interpreting the findings in other situations. One is that the sample consisted of all college students, an age group that is already considered adults but may still be in the process of evolving in terms of their planning and regulating their actions. Another limitation was that the number of items for each scale was not similar. For example, the metacognitive strategies scale had only 9 items compared to the 16 items in the discipline and self-control scale. This could affect the result of the analysis.

In the MTMM analysis of this study, the correlations between the monotrait-heteromethod (domains) is relatively high, suggesting that regardless of contexts (domains), the trait values are consistent. This result may indicate that the measures are not specific to the context of family, school, and community. Supplementary analyses give indication of domain generality instead of domain specificity. The test of 3 factor model resulted a poor fit and factor loadings were comparable.

One possible reason why there is no domain (context) difference in measure is that family, school, and community contexts are relatively similar in terms of relational structure and the tasks and roles expected of the youth. Family, school, and community all represent adult-supervised settings where youth exercise their ability to enact their roles and tasks through metacognitive strategies and discipline and self-control to attain a desired end. Consistent with the study of Sta. Maria et al. (2009) that the family, school, and community and the youth's nurturing relationship are all important their development. The contexts help the young persons in planning, monitoring, controlling and evaluating their decision- making and problem solving strategies towards their development.

Moreover, youth are consistent in performing their roles and tasks. These may help explicate the lack of specificity of the these traits. Humans are naturally consistent in their self- representation. These could help us to function normally and cope with the demands of the environment. Consequently, the young person's view of themselves as well as their traits in relation to role enactment tends to be consistent across different contexts of development. O'Leary & Sloutsky (2019) demonstrated the role of metacognition and regulation in both academic and non-academic context.

Thus, result of the study implies that the metacognitive strategies and discipline and self-control scales does not reflect context effect and that it can be exercised across domains. While there are developmental subscales measuring domain specificity of each scale, it is limited to domains of performance rather than domains of social context.

CONCLUSION AND RECOMMENDATION

Apart from family, school, and community contexts, one recommendation is to use peer and workplace contexts to examine if students will decide on the proper course of action and prioritize tasks to achieve their desired end in mingling with friends or in work responsibilities differently in such contexts. Also, to further expound in determining the extent in which the youth accept and are aware of the roles they play and the tasks they perform in the context of development, self- efficacy for roles and tasks could be added to the variable. This is to investigate if college students perceive that they are confident in their ability to successfully plan and having a sense of whether their plans and strategies are working in attaining their goals differently in family, school, and community contexts. A multi- trait multi-method analysis can also be used in investigating the subscales of each trait measured in different contexts. This is to examine if the subscales of each trait is similar across different contexts.

REFERENCES

Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology*, *52*(1), 1-26.

Bernardo, A. I.. (2003). Do Filipino Youth Really Value Education? Exploring Filipino Adolescents' Beliefs About the Abstract and Pragmatic Value of Education and its Relationship to Achievement Goals and Learning Strategies. *Philippine Journal of Psychology, 36(2)*. Retrieved from http://0-ejournals.ph.lib1000.dlsu.edu.ph/form/cite.php?id=1616

Burton, L. M. & Jarret, R. L. (2000) In the Mix, Yet on the Margins: The Place of Families in Urban Neighborhood and Child Development Research . *Journal of Marriage and Family, 62,* 1114-1135.

De La Salle University Department of Psychology. (2012). [Youth Development Research Project – Phase 2]. Unpublished raw data.

Duckworth, A. L., & Seligman, M. E. P. (2006). Self-discipline gives girls the edge: Gender in self-discipline, grades, and achievement test scores. Journal of Educational Psychology, 98, 198–208.

Flavell, J.H. (1979). Metacognition and cognitive monitoring: A new area of cognitive developmental inquiry. American Psychologist, 34, 906–911.

MacKenzie, M. B., Mezo, P. G., & Francis, S. E. (2012). A conceptual framework for understanding self-regulation in adults. *New Ideas in Psychology*, *30*(2), 155-165.

Magno, C. (2008). Self-Regulation, Self-Efficacy, Metacognition, and Achievement Goals of High School and College Adoelscents. *Philippine Journal of Psychology*, *41*(1-2).

O'Leary,A. & Sloutsky, V. (2019) Components of Metacognition Can Function Independently Across Development. *Developmental Psychology*. Vol. 55 (2) 315–328

Rothbart, M. K., & Bates, J. E. (1998). Temperament. In W. Damon (Series Ed.) & N. Eisenberg (Vol. Ed.). Handbook of child psychology: Vol. 3, Social, emotional, personality development (pp. 105–176). New York: Wiley.

Sta. Maria, M. A., Reyes, M. L., Mansukhani, R., & Garo-Santiago, M. A. (2009). Expectations and resources in different contexts of development: Towards positive developmental outcomes among Filipino youth. *Philippine Journal of Psychology, 42,* 291 313.

Zimmerman, B. J., & Kitsantas, A. (2014). Comparing students' self-discipline and self-regulation measures and their prediction of academic achievement. *Contemporary Educational Psychology*, *39*(2), 145-155.

PLEASE INCLUDE CONTACT INFORMATION:
NAME: HANZEN M. REYES
CONTACT NO: 09165962908
EMAIL ADDRESS: reyeshanzen@gmail.com