Factor Analysis of Expectancy, Value, and Sensitivity to Delay

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One of the way to gather information on procrastination is using a specific measuring instrument/ scale based on a theoretical construct and which is able to explain procrastination compre-hensively. Thus, the scale can be used as a predictor of procrastination. Unfortunately, that kind of scale is still limited. This study aims to validate the scale that can be a predictor of procrastination, namely Temporal Motivational Test (TMt), which is based on Temporal Motivational Theory (TMT), a theoretical construct that can explain procrastination comprehensively. In this study, validity of scale obtained from correlating each component in this scale with valid procrastination scales. The results show significant correlation between each component of TMT and valid procrastination scales ($r >$ .3 and $p <$ .005). The second way is to test the internal structure. The result is, two of the three components of the scale is measuring the same thing, namely persistence.

Keywords: procrastination, validation, TMT, TMt

Salah satu cara mengumpulkan informasi tentang prokrastinasi adalah menggunakan instrumen/ alat yang berdasarkan konstruk teoretis yang mampu menjelaskan prokrastinasi secara terpadu. Dengan demikian skala itu dapat dipakai sebagai prediktor prokrastinasi. Sayang sekali skala demikian masih langka. Studi ini memvalidasi skala yang mampu memprediksi prokrastinasi, yaitu Temporal Motivational Test (TMt), yang didasarkan pada Temporal Motivational Theory (TMT), sebuah konstruk teoretis yang dapat menjelaskan prokrastinasi secara terpadu. Dalam studi ini, validitas skala diperoleh dari mengorelasikan tiap komponen dalam skala ini dengan skala prokrastinasi yang valid. Hasil menunjukkan korelasi yang bermakna antara tiap komponen TMt dan skala prokrastinasi yang valid ($r >$ .3 dan $p <$ .005). Cara kedua adalah menguji struktur internalnya. Hasilnya menunjukkan, dua dari tiga komponen skala ini mengukur hal yang sama, yaitu ketekunan.

Kata kunci: prokrastinasi, validasi, TMT, TMt

Procrastination is a tendency to put-off doing a task that makes individuals feel uncomfort able (Solomon & Rothblum, 1984). Actually, procrastination is not a new thing to be investigated. Various references to procrasti-nation has existed at least since 3,000 years ago (Steel, 2007). This indicates that procrastination has been known at least since 3,000 years ago. The literature in the early days of the Roman Empire and Greece have mention procrastination. Procrastination itself has a variety of adverse effects, some of them are unpleasant emotions for individuals such as regret, guilt feeling (van Eerde, 2000), as well as poor performance (van Eerde, 2003).

Eventhough it has been known at least since 3,000 years ago and has been known that it has a devastating effect such as poor performance, procrastination still exist until today, and even increased (Steel, 2007). This may occur because of procrastination also gives some 'positive'

effect, that is as a way to avoid the stress for a while (Wyk, 2004). By procrastinating, individuals will temporarily directly are working on the assignment. Another positive effect is by procrastinating, individuals may get additional information in doing a task (van Eerde 2003).

In Solomon & Rothblum (1984), Ellis and Knaus said that 95% of students engage in procrastination. In addition, Steel (2007) also said that procrastination also have the opportunity to tend to increase in workers. This indicates that research about procrastination is a serious matter and can not be put-off (Steel, 2007). Hopefully, through research on procrastination, a variety of adverse effects caused by procrastination can be overcome. The more we delay the study of procrastination, it would cause the rate to increase so that the research on procrastination is really critical.

Before examining the various issues related to procras-tination, authors should gather information about procras-tination; one of the way to get it is by using a scale. The scale should be based on comprehensive theoretical frame-work to get more wholistic information. Steel (2007) proposed

a theoretical model that can explain procras-tination comprehensively. This theoretical model called Temporal Motivation Theory (TMT) is a theoretical model formulated by Steel (2006), which describes utility of a task. The lower the utility of a task, the greater the possibility of procrasti-nation. Utility is influenced by four components: expectancy, value, time delay, and sensitivity to delay. Based on that theoretical model, Steel (2011) then make a scale in English commonly known as Temporal Motivational Test (TMt).

Generally, procrastination scale can measure intensity of procrastination or reason to procrastinate. TMt is a measuring tool to measure/explain the reasons to procras-tinate. Procrastination will be measured from the various components to find/obtain a comprehensive framework of why people procrastinate. Not measuring procrastina-tion comprehensively will result in not getting a complete framework of why people procarastinate. Thus, the infor-mation obtained is only partial, which can not be used as a predictor of procrastination.

To the best of our knowledge, we found that the research on that scale is still very limited, especially in the Indonesian language. It will cause the collection of data about procras-tination also be limited, especially in communities that do not master the language used in the TMt scale. This is the reason for the authors to examine the measure in the Indonesian language. For the next section, the term TMt refer to TMt in Indonesian version.

Definition of Procrastination

According to Klein (cited in Steel, 2007) procrastination comes from the Latin "pro" which means moving forward and "crastinus" which means tomorrow or the next day. At first, procrastination is not significantly negative until at the middle of the 18th century industrial revolution (Ferrari, Johnson, and McCown, 1995). Now, procrastination becomes meaningful connotations asso-ciated with moral responsibilities (Sabini & Silver, as cited in van Eerde, 2003).

Individuals that procrastinate are they who put-off to start or complete an action (Solomon & Rothblum, 1984). Steel (2007) said that procrastination is an act of irratio-nal delaying even though the individual knows it would make the task can't be done maximally. Steel (2011) said that this is influenced by expectations of the success of a task to be done, value (desirability) for the individual, and sensitivity to delay.

Based on such understanding, we can conclude that procrastination is an act of putting off to doing things as a result of a lack of utility, either to start or to continue the task. Utility is influenced by the interaction of expectancy, value for the individual, and individual's sensitivity to the time delay in the tasks. Thus, it becomes critical for some previous scales which were not based on a comprehensive theory. From this understanding, the authors validate a scale that accommodates that three component, namely TMt.

Temporal Motivational Theory (TMT)

Temporal Motivation Theory (TMT) is a theoretical model formulated by Steel and König in 2006. This theory is a theoretical model that explain the motivation which includes time as a fundamental term (Steel and König, 2006). TMT theoretical model is formulated as follows (Gropel & Steel, 2008):

$$U = \frac{E \ \text{x} \ V}{(\Gamma \ \text{x} \ D) + 1}$$

Note.
U = Utility
E = Expectancy
V = Value
D = Delay
Γ = Sensitivity to Delay

Figure 1. Formula of Temporal Motivation Theory

Utility is a subjective perception of the usefulness of an effort for individuals The magnitude of this utility depends on the interaction between expectancy (E), and value (V) divided by the interaction between the length of time intervals when the subject tried to obtain the results of these efforts (D) and sensitivity to the time interval (Γ) which resulted in impulsivity in the execution of tasks.

Thus, the greater the value of E and/or V, then the greater the utility and vice versa. The opposite occurs in Γ and D. The larger the value of Γ and/or D, then the utility gets smaller and vice versa. In addition, to prevent the utility become undefined if the value of Γ and/or D become 0 (zero), a constant value (1) was then added.

Procrastination Based on TMT Approach

TMT is a theoretical model that could explain procrasti-nation comprehensively (Steel, 2007). This is actually a development of theories of motivation (Steel & König, 2006). Steel argues that procrastination occurs because utility of a task that should be done was less than utility from other task/activity. This small utility causes the moti-vation to perform tasks that should be done is smaller than the other tasks. Consequently, the individual will tend to do other tasks and delay to start or continue a task that should be done.

Expectancy. Procrastination can occur if indivi-duals have low expectations about success of a task. This is

closely related to self-efficacy of the indvidu (Steel, 2007). Self-efficacy is an individual belief about being success in working a task/activity. Self-efficacy (along with self-esteem) is related to fear of failure.

The higher the self-efficacy, the chances of procrastination will get smaller. Conversely, the lower the self-efficacy, the greater the opportunity to procrastinate. This happens because the higher expectancy, the higher the motivation of the individual to perform the task immediately.

Value. According to Steel and König (2006), value is associated with attractiveness (desirability) of a task. These components have three aspects, that is the task-aversiveness, achievement motivation, and boredom proneness (Steel, 2007). Just like expectancy, the higher the value of a task for an individual, the lower the possibility of procrastination. Conversely, the lower value of a task for an individual, the greater the opportunity for doing procrastination.

From the results of existing researches, individuals tend to put-off doing task that was felt unpleasant (Steel, 2007). This unpleasant feeling made the task aversive. As a result, the individual tend to put-off the task.

Achievement motvitation is related to procrastination because individuals who have a high achievement motivation will tend to have an engagement with his duties and task-aversiveness to be reduced (Steel, 2007). Meanwhile, boredom proneness was associated with procrastination because the higher boredom, the higher task-aversiveness. This make the individual to postpone task.

Delay. The time delay is defined as the interval between the time individuals make an effort to the time when the inidividual obtain result from that effort (Steel, 2007). The greater the time delay, the greater the chances of procrastination. Conversely, the lower the time delay, the less chances of procrastination. In some cases when the delay time is constant, there are different individual response to task, to choose to put-off a task or not. This difference is caused by individual factors whic is specific in each individual, namely individual sensitivity to delay. TMt measured sensitivity to the existing time delay.

Sensitivity to delay. This is also a part of TMT (Steel, 2007). Sensitivity to delay can be interpreted as how much an individual give attention to delay, so that it prevents the

individual to initiate or continue the construction work that should be done. This component is related to distractibility, impulsiveness, and a lack of self-control. The higher sensitivity to delay, the opportunity of the individual to procrastinate will be even greater. Conversely, the lower sensitivity to time delay, the less chance of an individual to procrastinate.

Self-control is related to procrastination because less self-control would make individuals tend to not perform a task that should be performed (Steel, 2007). Meanwhile, impulsiveness and distractibility affects procrastination because impulsive and easily distracted individuals will tend to do the desired things first and tend to be more difficult to focus on unpleasant things. Steel (2007) stated that impulvines is one of the variables that should be assessed. Later, scale that assess impulsiveness was finally included in TMt (Steel, 2011).

Method

The population in this study were all students of 2010 generation in the Faculty of Psychology, University of Surabaya. The data in this study were drawn by using a TMt scale that have been adapted to Indonesian language. Data from this scale will be correlated with data from other procrastination scales already known, like General Procrastination Scale (GPS), Adult Inventory of Procrastination (AIP), Decisional Procrastination Questionnaire (DPQ), Pure Procrastination Scale (PPS), and Procrastination Assessment Scale-Student (PASS). The internal structure of the Indonesian language TMt was also tested to see whether this measure also comprised the three components as discussed previously.

Results

In the reliability test, cronbach alpha (α) of 139 subjects in the expectancy component is .773, component value is .740, and component sensitivity to delay is .764. It is clear that every component in TMt is reliable because $\alpha < .70$. In the normality test, data distribution for the

Table 1
TMt Validity Evidence Based on Correlation with Procrastination Scale

TMt	PPS (r/ρ)	GPS (r/ρ)	AIP (r/ρ)	DPQ	P1T (r/ρ)	P1F (r/ρ)	P1P (r/ρ)	P1R (r/ρ)
Expectancy	- .378/.000	-.379/.000	-.349/.000	-.280/.001	-.278/.001	-.301/.000	-.288/.001	.000/.497
Value	- .427/.000	-.265/.002	-. 261/.002	-. 275/.001	-.191/.017	-. 254/.002	-.110/.114	-.507/266
Sensitivity to Delay	.486/. 000	.290/.001	.308/.000	.255/.002	.166/.033	.210/.010	.113/.107	.014/.441

Note. TMt = Temporal Motivation Test, PPS = Pure Procrastination Scale, GPS = General Procrastination Scale, AIP = Adult Inventory of Procrastination, DPQ = Decisional Procrastination Questionnaire, P1T = Total PASS 1, P1F = PASS 1 Frequencies, P1P = PASS 1 Problem, P1R = PASS 1 Reductions

Table 2
Factor Analysis for Expectancy, Value, and Sensitivity to Delay

Item	Factor 1	Item	Factor 1	Item	Factor 1
Expectancy 1	.667	Value 1	.541	Sensitivity to Delay 1	.630
Expectancy 2	.702	Value 2	.227	Sensitivity to Delay 2	.482
Expectancy 3	.642	Value 3	.624	Sensitivity to Delay 3	.693
Expectancy 4	.636	Value 4	.751	Sensitivity to Delay 4	.706
Expectancy 5	.438	Value 5	.666	Sensitivity to Delay 5	.747
Expectancy 6	.680	Value 6	.581	Sensitivity to Delay 6	.658
Expectancy 7	.673	Value 7	.660	Sensitivity to Delay 7	.189
Expectancy 8	.552	Value 8	.631	Sensitivity to Delay 8	.745

Table 3
TMt's Factor Analysis With Varimax Rotation

Item	Component		
	1	2	3
Sensitivity to Delay 5	-.752		
Sensitivity to Delay 8	-.725		
Sensitivity to Delay 3	-.649		
Value 5	.641		
Value 8	.630		
Value 4	.627		
Sensitivity to Delay 4	-.610		
Value 6	.608		
Sensitivity to Delay 6	-.604		
Sensitivity to Delay 1	-.572		
Value 1	.567		
Value 7	.547		
Value 3	.514		.421
Sensitivity to Delay 2	-.421		
Value 2			
Expectancy 4		.783	
Expectancy 3		.774	
Expectancy 2		.722	
Expectancy 1		.666	
Expectancy 7			.747
Expectancy 6			.675
Expectancy 5			.604
Expectancy 8			.598
Sensitivity to Delay 7			

components of expectancy and value are not normal ($p < .05$) while the component sensitivitity to delay indicates the normal distribution of data. Because most of the components is not normal, then the hypothesis testing/validation of this measure will be carried out by non-parametric analysis. Result of the correlation test is shown in Table 1.

Table 1 show the correlation between expectancy and PPS is - .378. Correlation between value and PPS is negative with a correlation coefficient of .427. On the other hand, the correlation between sensitivity to delay by PPS is positive with a correlation coefficient of .486. In the correlation with GPS, expectancy show a coefficient correlation of - .379, value show coefficient correlation of - .265 and sensitivity to delay show coefficient correlation of .29. Correlation between each component of the TMt and the AIP show significant result. Expectancy and value are negatively correlated (.349 and .261) with AIP, which means the higher the expectancy or value, the lower the score of AIP. In the other side, sensitivity to delay have a positive correlation (.308) with AIP.

Correlation between expectancy, value, and sensitivity to delay and DPQ is - .280, - .275, .255. Each component of TMt was also correlated with PASS 1. Correlation between expectancy, value, sensitivity to delay and PASS 1 total score is - .278, -1.91, and .166. In addition, the correlation between expectancy, value, sensitivity to delay and frequency aspect in PASS 1 is - .301, - .254, and .210. Correlation between expectancy, value, sensitivity to delay and problematic aspect in PASS 1 is - .288, - .110, and .113. Last, correlation coefficient between expectancy, value sensitivity to delay and reduction aspect in PASS 1 is .000, - .507, and .014.

In addition, the internal structure of all TMt items show that most of the components of value and sensitivity to delay loaded on one factor (except for item value number 2 and sensitivity to delay number 7). Meanwhile, expectancy component is broken into two factors. Test results can be seen in Tables 2 and 3.

Discussion

Predictive Validity

Analysis of the data in this study show a correlation between each component of TMt with other general procrastination scales (Table 1). Meanwhile, correlation between each component of TMt with a total PASS 1 is also significant. This suggests that TMt is also related to academic procrastination. Expectancy component is negatively correlated with procrastination because the lower the individual confidence when doing tasks/works, the more the individual will tend to choose to give up works that should be done (Steel, 2007). The individual tend to choose not to do a task/ work if they feel they will fail. If he/she did not not give up, then the individual will prefer to delay the execution of tasks/works.

Meanwhile, correlation between value and procrastination can be seen from the correlation of three aspects from this component with procrastination, that is task-aversivesness, need for achievement, and boredom proneness. Task-aversiveness related to procrastination because individuals tend to avoid aversive tasks (Steel, 2007). As a result, they tend to delay.

Need for achievement/achievement motivation is closely related to the intrinsic motivation of a task (Steel, 2007). Individuals who have a high need for achievement will tend to have an attachment to a task and this reduces the task-aversiveness. The same thing happened to boredom proneness. When individuals feel bored on a task, the task was felt uncomfortable/annoying (aversive) if it has to be done. The individual would choose to delay the execution of the tasks.

When individuals have of distractibility, impulsivity, and low self-control, the trend in making procrastination will increase because the individual will prefer to do the task that will give a pleasure or bring an instant result. As a result, individuals will prefer to delay the tasks that should be done. This trend applies if the task that should be done were found to be unpleasant/aversive for individuals.

Three things that were mentioned earlier, distractibility, impulsiveness, and self-control are aspects of component sensitivity to delay. This is the reason sensitivity to delay have correlation with procrastination. In addition, the tendency to be more oriented with instant results besides describing the role of sensitivity to delay also emphasize the role of time delay in procrastination. The more time delay, the more likely individuals to procrastinate.

In this study, the authors also discovered that every item in the TMt always includes an antecedent. Antecedents on each TMt can be seen in Table 4. In correlation with procrastination scales, TMt will be seen/has a tendency to occupy a position as an antecedent. In addition, each item in TMt was made based on the TMT approach as a theoretical model that could explain the causes of procrastination/predictor of procrastination (Morford, 2008). With that characteristic, it make sense that TMt as a scale based

Table 4

Antecedents in Temporal Motivation Test

Item	Antecedents
If I persevere, I will succeed.	(Confidence is due) perseverance.
I'm reluctant doing unattractive jobs.	Unattractive jobs.
I have often faltered because I easily impressed as pleasurable activity.	(tendendcy to) tnterested/fascinated by anything else (at the time was doing something).
When I mean it, I will see the results.	(Conviction if) mean the work
I hope, my job pleasurable .	Hope the work pleasurable.
I'm working on a new task which at first looks fun without thinking about the consequences.	The tendency to choose a task that looks fun/pleasurable in the beginning.
If I try harder, I will succeed.	(Confidence in the results of) Try harder.
My work activities seem useless (no meaning).	Work activities that seem useless.
When the temptation in front of the eyes, the craving is very strong.	Tendency to tempted.
I am sure my effort will come to fruition	Confidence in the result of effort.
I'm bored with the task.	Boredom.
I ignore my long term goal is just for temporary pleasure.	Short-term orientation.
I feel persistent and resourceful.	Confidence about tenacity and ability.
I am less enthusiasm fulfill my responsibilities.	Lack of enthusiasm/passion.
I am easily influenced interesting things that suddenly appeared in front of me.	The existence of other things that attractive.
Whatever problems facing in front of me, I will eventually overcome it.	Confidence to overcome the problem.
When a task is tedious, again I find myself pleasaantly daydreaming rather than focusing.	Tedious task.
I have difficulties to delay the exciting opportunities as they arise.	Difficulties to delay the pleasant thing.
I can overcome difficulties with sufficient effort.	(Belief caused by) sufficient effort
I do not find pleasure in my works.	Unpleasant works.
I prefer small but immediate pleasure rather than a large but delayed.	Tendency to choose small pleasures, but immediate.
Winning is in my control.	Confidence will get a victory.
If activity is boring, my mind drifts to another thing which is more attractive.	Boring activities.
It's hard for me to delay gratification.	Difficulties to delay gratification.

on TMT have a tendency to occupy a position as an antecedent.

If it refers to the requirement of causality, then the first condition for the existence of causation between variables has been proven through significant correlation test results. Meanwhile, the analysis of the characteristics of the TMt measure that has a tendency to occupy a position as an antecedent of procrastination indicate the second causality requirement could be met. To qualify and claim the third causality requirement and claim that causality exists, further research shpuld be conducted in the form of experimental research by using data from this study.

Internal structure of TMt

Based on internal analysis results, it appears that the expectancy component is divided into two factors, namely the second factor and third factor. The second factor contains items that translated become "I am sure my effort will come to fruition", "if I try harder, I will succeed", "when I mean it, I will see the results", and "if I persevere, I will succeed." Based on the content of these items, the authors later named this factor as self-efficacy in accordance with TMT construct.

Meanwhile, the third factor consisted of items expectancy of five to eight numbers. Items contained in this factor are "I feel persistent and resourceful", "whatever problems facing in front of me, I will eventually overcome it", "I can overcome difficulties with sufficient effort", and "winning is in my control." Authors found that all items contained in the evaluation of proficiency/competence of the subject.

Item number three in the value component loaded on this factor also shows a similar thing. The item reads "My work activities seem useless (no meaning)" indicates a negative evaluation of subjects competence. Positive charge (+) on factors analysis occurs because the value component is unfavorable that has been reverse earlier. By looking at items contained on this third factor, the authors name this facor as self-competence.

Self-competence is part of the self-esteem (Reasoner, n. d.). Self-esteem and self-efficacy are the two variables, which are both related to fear of failure (Steel, 2007). Expectancy relationship with procrastination can not be separated from fear of failure. Individuals tend to be afraid of work/delaying tasks that were difficult to succeed. This makes the authors suppose that expectancy component of TMt, besides measuring self-efficacy, also measure other variables associated with fear of failure incidentally, self-esteem. This expected expectancy component split into two factors on the results of factor analysis.

Factor analysis results also show that almost all of the items on components value and sensitivity to delay loaded on the same factor. These two components are contained in factor 1. This indicates that value and sensitivity to delay tend to measure things related to one another.

Based on previous explanation, it is known that sensitivity to delay will take a role when tasks that should be done are felt uncomfortable for the individual or there is something more interesting for the individual rather than tasks that should be done. This suggests a strong association between task-aversiveness, which is an aspect of the value component, with individual sensitivity to delay. That is, individual sensitivity to delay also depends on the individual evaluation to tasks if task are aversive/undesirable or not. This is the reason why these two component finally loaded on one factor in factor analysis.

Furthermore, the authors then tested the correlation between every component of TMt find additional evidence. Based on these tests, it was found that the correlation of value and sensitivity to delay was - .722 (with $p =$ .000). Results of factor analysis and correlation test provide more than enough evidence that these two components strongly related to each other.

The aspect that was measured by each of the seven items on the two components is persistence. It can be seen from the items contained in that component, such as "I am easily influenced by interesting things that suddenly appeared in front of me", "when the temptation in front of the eyes, the craving is very strong,", "I am less excited to fulfill my responsibilities", or "if activity is boring, my mind drifts to another thing which is more attractive". Persistence is the ability of individuals to exert great effort in a long time without being distracted to achieve the desired results (Schuler, nd).

Individuals with high levels of persistence are able to focusing his attention for a long time without being distracted and capable to keep the passion when doing tasks. The existence of persistence helps individuals to overcome task-aversiveness. Persistence is one of the part in achievement motivation/need for achievement. Need for achievement is one aspect of the value component in TMT.

Regarding value number two that read "I hope, my job is pleasurable" does not belong to the same component with other value's items on factor analysis, the authors presume that this is caused by the grammar. In Indonesian grammar, the sentence does not mean that the tasks that currently undertaken was not pleasurable. In addition, this phrase describe the individual's hope that he/she will do pleasurable/enjoyable tasks. The expectation suggests that subjects actually do not know if the task will be pleasurable/enjoyable or not so that they have not explain how subjects respond to tasks. Thus, this item does not measure whether the subject feel his tasks

was enjoyable or not (task-aversiveness). This is why it is not loaded in the same factor with other value's items and did loaded to the first factor in factor analysis.

Meanwhile, sensitivity to delay's item number seven, which reads "I prefer small but immediate pleasure rather than a large but delayed" does not loaded at same factor with the other sensitivity to delay's items presumed because small pleasure not always mean temporary while a large but delayed pleasure does not always mean/relating to the objectives/long term goals. Furthermore, selecting a small but immediate pleasure rather than a big pleasure but delayed can be associated with planning and requirements. Examples can be seen in some individuals who prefer not to deposit their money in the bank beause fear if they have an urgent matter and need money but can not take the money because it is being deposited. From here we can see that the decision not to depositing money will not make more money than depositing money in the bank. Assuming that individuals are more pleased with more money than less money, then deposit the money in the bank will be said to bring greater pleasure than not depositing the money in the bank. Based on this point of view, it appears that the choices made are in no way associated with sensitivity to delay or even persistence. In this case, the choice is more based on planning. Thus, it makes sense if the item was not loaded with other sensitivity to delay's items or in the first factor in factor analysis.

The results of internal structure of TMt and the results of additional tests conducted show that each component of TMt is not perfectly loaded on one factor. This is an evaluation for this scale.

Conclusion and Suggestions

Result reveals indications that TMt scale may be a predictor of procrastination. However, there is also indications that TMt measure the same thing or at least measure one thing simultaneously in two components, value and sesnitivity to delay. This becomes the evaluation for this scale. Notwithstanding that, TMt can still be used as a predictor of procrastination. Based on the findings of factor analysis, the use of existing items are not viewed as a represen-tation of a component of TMT (especially value and sensitivity to delay), but purely looking at the antecedents contained in each item. Thus, preventive action can be done against procrastination by looking at the antecedent.

This research combines data from both men and women. For further research, especially for validation, it is advisable to analyze data between males and females separately in order to know whether there are certain variables asso-ciated with gender. Also, the result can be more specific.

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