Factors of Meta-Mood: Attention, Clarity, Repair, and What Else?

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Abstract

Meta-mood experience is typically divided into three factors. Using 202 undergraduates, we compared one-, three-, and four-factor models. The four-factor model fit best. The fourth factor, Emotional Fortitude, indicates someone has a consistent outlook regardless of emotions. Scale scores based upon all four factors should be used in the future.

Introduction

There is a long history of aiming to understand the ways people perceive emotions. Salovey and Mayer best define a concept called emotional intelligence as the ability to monitor one's and other's emotions, in addition to knowing how to use and discriminate that information (Salovey & Mayer, 1990). Another element of emotion is meta-mood which is defined as an individual's awareness of their emotions: reflecting, monitoring, evaluating, and regulating them (Salovey et al., 1995). Researchers Salovey et al. wanted to gain a deeper understanding of the individual differences in meta-mood.

Salovey et al. (1995) conducted a study assessing the factor structure and reliability of a measure they developed called the Trait Meta-Mood Scale (TMMS). This test intends to measure meta-mood and the individual differences of people's self-analysis and management of their emotions. The first version of the TMMS had 48 items. After conducting a confirmatory factor analysis (CFA) on the first version, Salovey et al. dropped items with low loadings. They found that a 30-item version of the TMMS had internal consistencies as high as those for the 48-item version, leading them to recommend use of the more efficient 30-item version (Salovey et al., 1995). The remaining 30 items loaded onto three unique factors: Attention, Clarity, and Repair.

Later, Palmer et al. (2003) conducted a study which examined the factor structure of the TMMS. An exploratory principle components analysis revealed that four factors could be extracted from the items. They went on to conduct CFAs on a variety of models of the TMMS and found that Salovey et al's three-factor model and a new four-factor model both had good fit.

The item with the highest loading in Palmer's fourth factor was "My beliefs and opinions always seem to change depending on how I feel." We can see that a person who rates this item high on the scale has a stable opinion and outlook, regardless of how they are feeling. The additional items that loaded onto this item have a similar interpretation. Therefore, we believe that the fourth factor measures Emotional Fortitude. We define Emotional Fortitude as the ability to maintain strength and stability through adverse emotions. Someone who scores high on factor four is able to maintain a solid, and courageous attitude in spite of difficulties.

Although Palmer's findings differed a bit from Salovey's, both researchers overlooked a phenomenon called data point censoring. Censoring occurs when researchers only have some information about the value of a variable, given that the value is at least as large as a given limit of detection. In psychology, there are many instances where censoring can occur. In one instance, censoring occurs when rating scales do not distinguish people at one end of the dimension. Left censoring occurs when low scores fail to reflect the variability on the low end of the dimension of interest. For example, TMMS item three states "I don't think it's worth paying attention to your emotions or moods." The accumulation of low scores on this item fails to distinguish among people who vary in the degree to which they pay attention to their emotions or moods. The item is not accurately measuring the variance of how much people disagree with the item, resulting in an inadequate measure of attention.

Left unaccounted for, censored data can distort results and invalidate the conclusions of a study. We decided to use the R package *lava* (Holst et al., 2015) to estimate CFA models because it can correct for the effects of censoring.

Using *lava,* we conducted CFAs of one-, three-, and four-factor models of the TMMS while accounting for censoring. The discrepancy between the findings of Salovey et al. (1995) and Palmer et al. (2003) and the fact that neither of them accounted for data point censoring is why we are conducting our study.

Method

Participants

To recruit participants for this study, an ad was placed on a University of Nevada, Las Vegas (UNLV) bulletin board for the UNLV Psychology Subject Pool during the Fall 2002 semester. In order to be eligible to participate, participants were required to be at least 18 years old. The 202 participants ranged in age from 18 to 49 years old (M = 22.70, SD = 6.29). The study was made up of 65 males and 137 females. Participants' racial and ethnic demographics included 116 White, 20 Black, 20 Hispanic, 32 Asian, 1 Native, and 13 other.

Those who belonged to the UNLV Psychology Subject Pool were incentivized by receiving research credits for their participation. The Subject Pool was predominantly undergraduate students enrolled in PSY 101 General Psychology and PSY 240 Research Methods.

Measures

The Trait Meta-Mood Scale (TMMS; Salovey et al., 1995) is a 30-item test designed to measure meta-mood. It consists of 30 items which the participants are to rate using a 5-point Likert scale: *1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree*. Salovey uses a 3-factor model which involves: clarity, attention, and repair of emotions.

Procedures

The participants completed the TMMS on computers. They were encouraged to use the computers in the UNLV computer labs to prevent distractions as well as to increase standardization.

Data Analysis

We ran confirmatory factor analyses on one-, three-, and four-factor models of the TMMS. Item 12 was excluded from the four-factor model because it did not have salient loadings on any of the factors.

In order to determine which items were potentially censored we read the items that had an accumulation of scores at either extreme of the rating scale. We identified items 3, 27, and 29 as potentially having censored values. Item 3 states "I don't think it's worth paying attention to your emotions or moods." A large number of participants disagreed with this statement. There seems to be variability among the people who, despite rating the item the same, do not all pay attention to their emotions to the same degree. This does not accurately measure high attention which is what a low rating on this item should reflect. Item 27 states "Feelings are a weakness humans have." A large number of people strongly disagreed with this statement. There might be variability among the people who, despite rating the item the same, do not all think of feelings as a weakness to the same degree. This does not accurately measure high attention which is what a low rating on this item should reflect. Item 29 states "It is usually a waste of time to think about your emotions. "A large number of participants disagreed with this statement meaning that they do not think it is a waste of time to think about their emotions. There might be variability among the people who, despite rating the item the same, do not all think of thinking of their emotions as a waste of time to the same degree. This does not accurately measure high attention which is what a low rating on this item should reflect.

Although *lava* is useful to determine which model best fits our data while accounting for censoring, it does not provide absolute measures of fit for censored models with ordinal data. Therefore, we relied on the Akaike Information Criterion (AIC) and the Bayesian Information Criterion (BIC). In AIC and BIC tests, the lower the score, the better the fit.

Results

The AIC and BIC values are lower for the four-factor model than for either the one- or three-factor models. Using this information, we conclude that the four-factor model best fits our data.

Item nine had the highest factor loading on the fourth factor (0.698). It reads: “When I am upset, I realize that the “good things in life” are illusions.” The next highest loading item for this factor was item 14. Item 14 states: “My beliefs and opinions always seem to change depending on how I feel.” Items 19 and 24 also loaded onto factor four. These four items measure an individual's ability to maintain a balanced and positive outlook despite experiencing difficult emotions. We interpret this factor as a measurement for Emotional Fortitude.

Discussion

This study was conducted to evaluate the fit of one-, three-, and four-factor models of the TMMS; however, unlike previous studies, we accounted for data censoring. Like Palmer et al. (2003), we found that four-factor model fit best. These results provide additional support for a four-factor model of the TMMS. Furthermore, we interpreted the novel fourth factor as Emotional Fortitude. The highest loaded item for factor four was item 9: “When I am upset, I realize that the good things in life are illusions,” (Salovey et al., 1995). This is one amongst the three total items that significantly loaded onto the fourth factor.

Generally, scale scores are only calculated for Attention, Clarity, and Repair. For a more detailed description of the meta-mood experience, users may wish to calculate a scale score fourth factor. This scale score should be calculated by including items 9, 14, and 19.

This study had two key limitations. Our biggest limitation was that absolute measures of fit were not used. We did not utilize absolute measures of fit because *lava* does not offer any for censored models that include ordinal data. We recommend future researchers attempt to replicate or extend our study using different statistical programs. One program that may be capable of estimating censored models and providing absolute fit statistics is Mplus. The second limitation of note is that participants were exclusively UNLV students. Using such a population limits the generalizability of our results., Palmer et al. (2003) suggested that the sample being examined may be the cause of discrepancies between their study and Salovey et al (1995).

We conclude that future research should include Emotional Fortitude as a factor of TMMS. Additionally, it is important to include a more varied population. This would further evaluate whether the scores change based on the difference in demographics.

References

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Table 1

One-, Three-, and Four-factor Models for the TMMS

Item Number	One Factor	Three Factor	Four Factor
1	1	1	3
2	1	2	2
3	1	2	2
4	1	2	2
5	1	3	1
6	1	3	1
7	1	2	2
8	1	1	3, 4
9	1	1	4
10	1	2	2
11	1	3	1
12	1	2	NA
13	1	1	3
14	1	3	4
15	1	3	1
16	1	3	1
17	1	2	2
18	1	2	2
19	1	1	3, 4
20	1	3	1
21	1	2	2, 4
22	1	3	1
23	1	2	2
24	1	2	2, 4
25	1	3	1
26	1	1	3
27	1	2	2
28	1	3	1
29	1	2	2
30	1	3	1

Note. The numbers in columns 2-4 indicate which of the four factors each item loaded on for that particular model.

Table 2

Fit Statistics for TMMS Factor Models

	One Factor	Three Factor	Four Factor
AIC	15084.6	14604.03	14040.44
BIC	15084.6	15241.43	14707.99

Note. AIC = Akaike Information Criterion; BIC = Bayesian Information Criterion.

Figure 1

General Factor Model

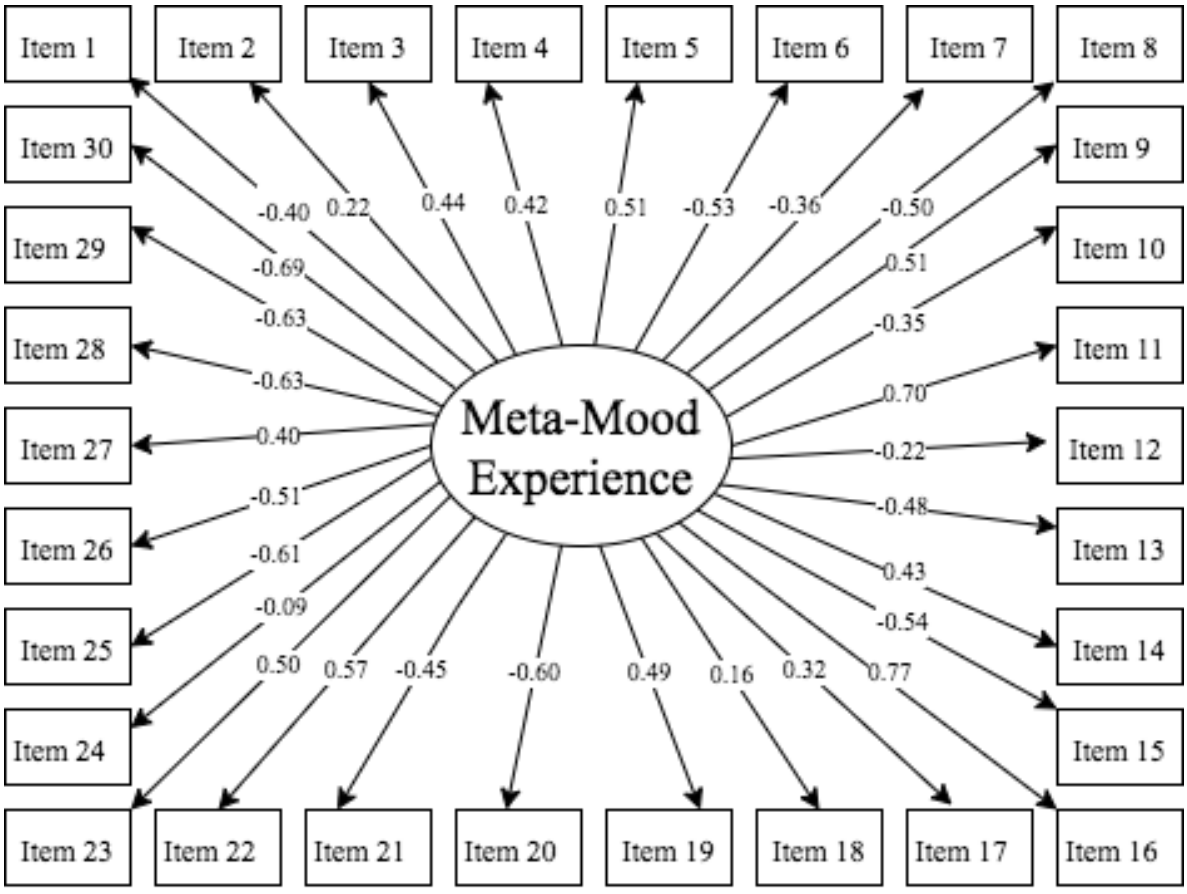

Figure 2

Three-Factor Model (Salovey et al., 1995)

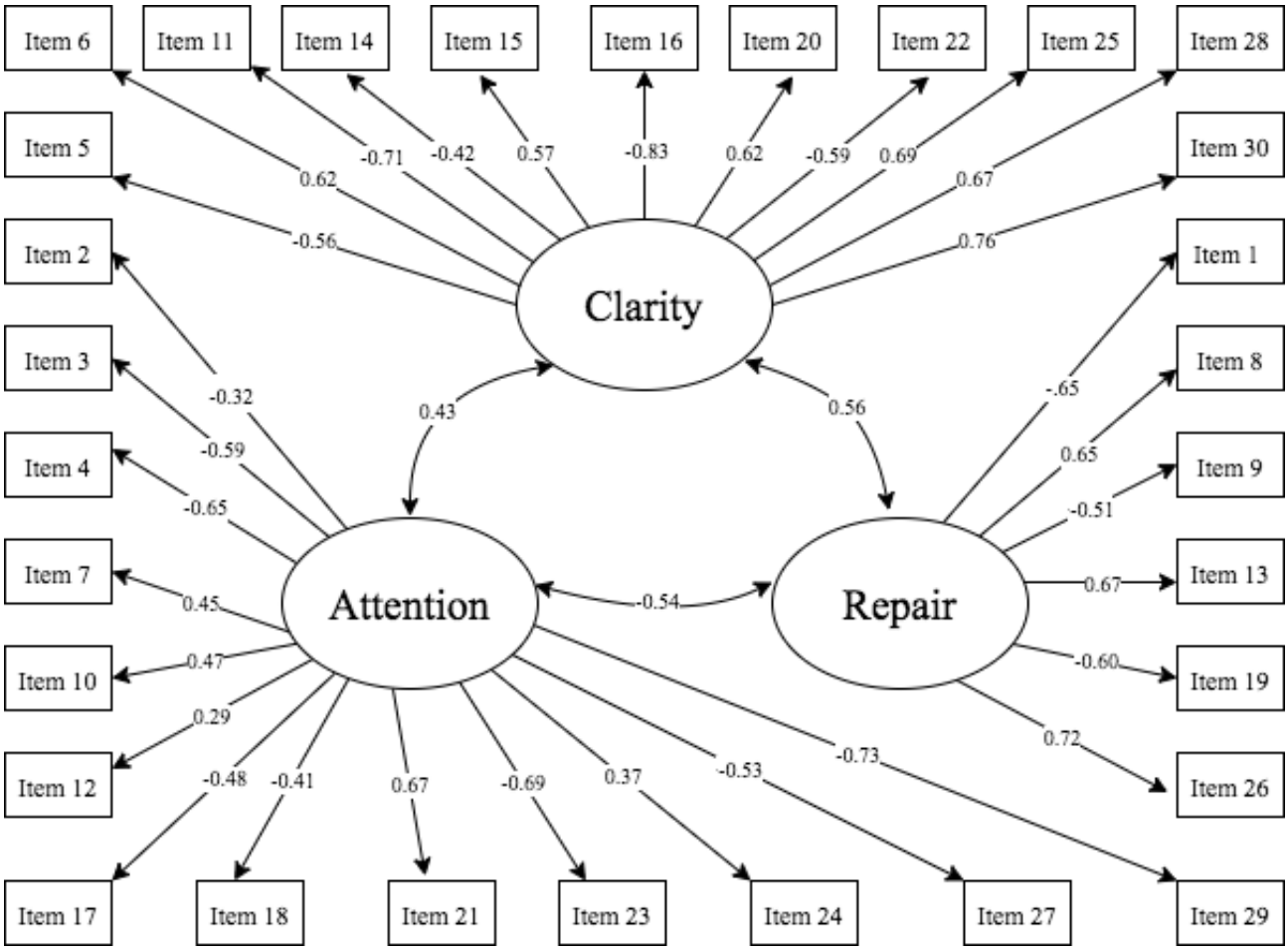

Figure 3

Four-Factor Model (Palmer et al., 2003)