

Narrative construction reflects the emotion regulation component of ability-based emotional intelligence

Highlights

- Narrative construction of emotional episodes builds on emotional information processing.
- The use of subjectification in narratives, that is, character-related information, reflects the level of the emotion regulation component of AEI.
- Narrative construction can be measured with automated linguistic analysis objectively.
- Narrative construction meets several important criteria of a performance-based measure of AEI

Abstract

Ideally, ability-based emotional intelligence (AEI) should be measured in everyday emotional response. The study argues that narrative construction is a potential candidate for this purpose. The study sets up the hypothesis that constructing a problem-centered narrative reflects the level of the emotion regulation component of AEI. Ninety participants were asked to narrate four emotional episodes. The emotion regulation component of AEI, fluid intelligence, emotional functionality and personality were assessed with self-report measures. The use of subjectification in narrative construction was measured with automated linguistic analysis. The results show that the level of subjectification reflects the emotion regulation component of AEI. The findings are discussed in terms of the usefulness of automated linguistic analysis in measuring AEI.

Keywords

Ability-based emotional intelligence, Emotion regulation, Narrative construction, Automated linguistic analysis

1. Introduction

Almost 15 years ago, researchers of ability emotional intelligence (AEI) closed their review on the subject by expressing their vision of “the next generation of EI tests that mimic real-life, emotion-laden situations and fluid, real-time emotional responses” (Rivers et al., 2007, p. 251). Although there have been new developments in measuring AEI since then (MacCann & Roberts, 2008), the field is still waiting for the new generation of measures. The present study demonstrates that narrative construction of past emotional episodes is a potential candidate for this purpose. There is a number of criteria that must be met by such a measurement procedure. Two of them are that the task has to be based on dealing with emotional information, and task performance has to be analyzed objectively. We focus on these two criteria, while selecting the emotion management component of AEI from the four branches model (Rivers et al., 2007).

Emotional episodes are shared quite frequently (Rimé, 2009). In most cases, they are shared in a narrative form (Buck et al., 2014; Habermas, 2018, Stein & Hernandez, 2007). Narratives provide an efficient means of describing past emotions. One reason for this is that a narrative typically centers on some problem (Stein & Hernandez, 2007) that can be best described by taking account of the goals of the protagonist. At the beginning of the narrative, the audience learns about a character who is facing an event or situation having consequences for attaining his or her goal. Then the character maintains the goal or sets a new goal and acts to achieve it. At the end of the narrative, as a resolution, the character either achieves the goal or modifies it. Since each stage of a typical narrative is related to goals, narratives abound with emotions (Stein & Hernandez, 2007). The rich emotional content of a narrative is further enriched by adding a layer of evaluative structure during narration (Labov, 1972). Due to the highly emotion-relevant contents of a typical narrative, it is reasonable to assume that narratives necessarily deal with emotional information.

Although narrative analysis is usually classified as a qualitative method, this does not preclude the viability of an objective analysis of narratives. It can be done by using the method of content analysis (Buck et al., 2014; Habermas, 2018) or by combining a set of specific linguistic tools. For example, Pasupathi and her colleagues (2017) consider the use of past verb tense as a marker of closure in narratives. The criteria for an objective analysis are fully met when automated linguistic procedures are used to analyze narratives (László et al., 2013; Stein & Hernandez, 2007).

This study employed the latter method to grasp the structure of narratives. As previously mentioned, the construction of a problem-centered narrative is based on the expression of the protagonist's goal. One possible means of making the character's goal accessible to the audience is subjectification, either by offering direct insight into the mental realm of a character or by describing events and circumstances from a character's subjective perspective. A subjectivized narrative not only describes what happened but also describes the events as seen by the character, thus subjectification provides a useful background for the audience to assess the character's goal attainment. The present study met the criteria for an objective analysis by developing automated linguistic procedures to identify the use of subjectification in narratives. The procedures were based on the twelve types of subjectification included in the model of narrative transformation proposed by Todorov (1977; see Table 1).

2. Hypotheses

Hypothesis 1 Narrative construction can also be considered as an emotion regulation strategy. Pasupathi and colleagues (Pasupathi et al., 2017) found that narration effectively decreases the intensity of negative emotions such as anger and sadness. The authors considered emotion regulation as a downregulation process. However, there could be other possible models for emotion regulation. It can be argued that the structure of a problem-centered narrative unfolding during narration is shaped by a particular mode of emotion regulation in the narrator, which is represented by an inverted U-shaped curve of emotional intensity. The ascending and descending phases of the curve correspond to the complication and resolution sections of the narrative, respectively. Previous research based on the structural affect theory (e.g., Brewer & Lichtenstein, 1982) confirmed the inverted U model of affective intensity in narratives, albeit from the readers' point of view. However, it is reasonable to assume that this emotional intensity curve applies to the narrator as well. Consistently with this argument, it was hypothesized that subjectification would reflect the level of the emotion regulation component of AEI. More specifically, it was expected that narrators with a higher level emotion regulation would use more subjectifications in their narratives than narrators with a lower level of emotion regulation.

Hypothesis 2 Narrative construction has also been considered as a way of thinking (Bruner, 1986; Schank, 1990). As such, it offers a potential means to operationalize the concept of fluid intelligence. Schank (1990) argues that understanding a new narrative is based on the

understanding of old narratives. In these terms, the critical point is how a new narrative is related to old narratives. According to Schank, the key mechanism is labeling the narrative. Since a narrative with frequent subjectification has a rich content in terms of diverse perspectives, it may invite a wider variety of alternative labels associated with different old narratives than a narrative with less subjectification. On this basis, it was hypothesized that the frequency of subjectification would reflect the level of fluid intelligence. More specifically, it was expected that narrators with higher levels of fluid intelligence would use more subjectifications than narrators with lower levels of fluid intelligence.

Hypothesis 3 Furthermore, in line with relevant previous findings, it was also hypothesized that the frequency of subjectification would reflect the level of depression, since depression is indicative of facility with emotions (e.g., MacCann & Roberts, 2008).

Hypothesis 4 Finally, it was also hypothesized that the frequency of subjectification would reflect personality, while the relevant statistical associations were expected to be low in magnitude, since AEI belongs more to the intelligence domain than to the personality domain.

3. Method

3.1. Participants

The study involved 90 undergraduate students (68 women) as participants. The only condition for participation was that they be older than 18 years. The participants' age ranged from 19 to 32 years ($M=23.2$, $SD=4.4$). They took part voluntarily and without compensation. All of them were native Hungarians.

3.2. Measures

The emotion regulation component of the AEI was measured with the Hungarian version of the Situational Test of Emotion Management (STEM; MacCann, & Roberts, 2008; adapted to Hungarian by Nagy, Sellei, & Magyaródi, 2015). The test contains 44 items. Each item describes a situation in response to which the respondent selects the most effective course of action. The Hungarian version has good psychometric properties (Cronbach's $\alpha=.709$; see Nagy, Sellei & Magyaródi, 2015).

Fluid intelligence was measured with the RAVEN Progressive Matrices Assessment Test (Raven, 1998; Rózsa, 2006). The test contains 60 items. Each item presents a set of geometric shapes with a piece missing in the final frame. The respondent has to compare the individual shapes within each set in order to find the missing piece. It is a well-validated assessment test.

Facility with emotions was assessed with the Center for Epidemiologic Studies Depression Scale (Novak et al., 2010; Radloff, 1977). The Likert scale lists 20 feelings, each of which is rated by the respondent on a 4-point scale ranging from *Never* (0) to *Most of the time or constantly* (3) according to the frequency of experiencing each during the previous week.

Personality was measured by the Big Five Inventory (John, Donahue, & Kentle, 1991; adapted to Hungarian by Rózsa, Tárnok and Nagy (2020)). The Likert-type self-report measure consists of 44 items, each rated on a 5-point scale ranging from *Disagree strongly* (1) to *Agree strongly* (5).

3.3. Narrative construction

The narrative construction of emotional episodes was sampled by asking the participants to recount four emotion eliciting events such as a memorable New Year party, a challenging university exam, meeting a good friend for the first time, and having a conflict with someone. The presentation order of the topics was counterbalanced.

3.4. Procedure

The research plan was approved and licensed by the Research Ethics Committee of the Károli Gáspár University of the Reformed Church in Hungary (under License No. BTK/535-1/2020). After giving informed consent, the participants recounted the four narratives to the investigator, then they completed the employed self-report measures. The narrative accounts were tape recorded and transcribed verbatim.

3.5. Analysis of subjectification

The use of subjectification was analyzed with automated linguistic procedures combining semantic, morphological and syntactic features, and part-of-speech categories. The unit of analysis was the clause, defined as having a main verb with its arguments. The analysis classified each clause according to whether or not it was subjectified. Subjectified clauses were further classified according to the type of subjectification.

To assess the reliability of the procedures, 80 narratives (word count: 11,054) were manually analyzed by three independent coders. The results of the manual analysis were used as a gold standard to which the output of the automatic analysis was compared to. The level of agreement between the manual and automatic analysis was assessed for each coding category with Cohen's κ coefficients. The obtained κ values varied between .69 and .82, indicating that the results of the automatic analysis were reliable.

4. Results

The average length of a narrative was 128.2 words ($SD=63.3$). Each participant's narrative data were merged across topics for statistical data analysis. Relative frequencies were obtained for each type of subjectification by dividing the absolute frequencies by the respective total numbers of non-subjectified clauses. As can be seen in Table 1, the assessed types of subjectification widely varied in frequency. Subjectification by manner was used most frequently, while subjectification by supposition was not used in the narratives.

Subsequently, the relative frequencies of subjectified clauses were standardized. To test the first hypothesis, the sample was divided into two equal groups of 45 participants based on their STEM scores, using the median as the cutoff value ($Mdn=21.3$). The obtained grouping variable was entered in the MANOVA model as the independent variable, and the standardized relative frequencies of the 11 types of subjectification revealed in the narratives were entered as the dependent variables. The results showed that the STEM level (low, high) had a significant overall effect on the use of subjectification ($F(11,78)=2.41$; $p=.012$; see Figure 1). A follow-up analysis of variances showed that the STEM level had a significant effect on the use of three types of subjectification including Intention ($F(1,88)=7.39$; $p=.008$), Aspect ($F(1,88)=5.39$; $p=.023$) and Manner ($F(1,88)=4.67$; $p=.033$). Participants with higher levels of emotion regulation more frequently indicated intention, aspect and manner in their narratives than did those with lower levels of emotion regulation. Fluid intelligence did not significantly influence the observed effects as revealed by an alternative model including the RAVEN test score as a covariate. These results confirm the first hypothesis.

To test the second hypothesis concerning the positive association between fluid intelligence and the use of subjectification, the sample was divided into two approximately equal groups of participants with low versus high RAVEN scores ($N=49$ and 41 , respectively), using the

median as the cutoff value ($Mdn=54.0$). A MANOVA test was conducted with the level of fluid intelligence (low, high) as the independent variable and the standardized relative frequencies of the 11 types of subjectification as the dependent variables. The results showed that fluid intelligence had no effect on the use of subjectification ($F(1,88)=1.31; p=.237$). These results do not support the second hypothesis.

The third and fourth hypotheses were tested with an analysis of correlations of the standardized frequencies of the 11 types of subjectification with the level of depression and the Big Five personality dimensions. The level of depression showed significant positive correlations with three types of subjectification including Attitude ($r=.32; p=.001$), Status ($r=.22; p=.020$) and Aspect ($r=.18; p=.047$). These low to moderate associations confirm the third hypothesis. Of the 55 pairwise associations between the Big Five personality dimensions and the 11 types of subjectification, only two were statistically significant (openness and subjectification: $r=.27; p=.010$; conscientiousness and attitude: $r=.22; p=.035$), which confirms the fourth hypothesis predicting no substantial relationship between the use of subjectification and personality.

5. Discussion

The present study examined whether the construction of narratives about past emotional episodes would reflect the emotion regulation component of AEI. The goal-based structure of problem narratives was the target, whose measurement was based on the use of subjectification. The obtained results confirmed most hypotheses. The use of subjectification reflects the emotion regulation component of AEI. Relatively high levels of emotion regulation are indicated by the frequent use of intention, manner and aspect in the narratives, among which the most useful indicator is intention. These findings directly confirm the view that subjectification contributes to the construction of a problem-centered narrative. Furthermore, the findings of the present study corroborate that the use of subjectification is related to everyday emotional functioning, and it is independent of personality. Contrary to the expectations, however, the use of subjectification was found to be independent of fluid intelligence, a possible explanation for which is that labeling is based on content categories and thus less sensitive to subjectification.

The findings are in line with the argument that the construction of a problem-centered narrative proceeds in parallel with a specific pattern of changes in the narrator's emotional intensity represented by an inverted U-shaped curve. Narrators with a higher level of emotion regulation are better at imposing this narrative structure upon emotional experiences. This explanation extends the consideration of emotional intensity from the closure (Pasupathi et al., 2017) to the whole narrative. While it is reasonable to solely focus on the closure when examining extreme emotions, the expressive narration of ordinary emotional experiences includes both the initial intensification and subsequent abatement of affect. By this explanation, the study brings empirical support to the view that both emotions and narratives follow a goal-based structure (Stein & Hernandez, 2007).

It can be concluded from the study that the analysis of narrative construction of past emotional episodes is a potential candidate for measuring AEI. Although this conclusion points to a new direction regarding AEI measurement, it could be meaningfully related to at least one type of AEI measures, namely, situational tests such as the STEM (MacCann & Roberts, 2008) used in the present study, for example. Situational tests shortly describe hypothetical events taking place in specific contexts and ask for an emotion category thought to be effective in each situation. This could be aptly described in narrative terms: a situational test describes a precipitating event having relevance to goal attainment. From this point of view, the present study extended the assessment of emotional functioning to the whole process of goal attainment described by a narrative.

There are several advantages of an AEI measure based on the analysis of narrative construction. It has been shown that narrative construction deals with emotional information. Narrative construction is a complex mental process as described under the concept of autobiographical reasoning (Habermas, 2018). Furthermore, narrative construction typically unfolds in an interpersonal interaction, which significantly influences the construction of a narrative (Habermas, 2018; Labov, 1972). Due to this complexity and context sensitivity, a narrative-construction-based measure can be considered as a performance measure.

In the field of measuring AEI, it is challenging to meet the criteria for an objective evaluation of responses (Rivers et al., 2007; MacCann & Roberts, 2008). The present study meets this challenge effectively by analyzing the structure of narrative accounts given in a free response setting rather than evaluating the selection of emotion categories in response to predefined

hypothetical situations. The employment of automated linguistic procedures further reinforces the objectivity of analysis, while it also contributes to the expanding field of automated linguistic analysis of narratives (László et al., 2013, Stein & Hernandez, 2007).

Furthermore, narrative construction has high ecological validity (Buck et al., 2014). It is because telling narratives is a ubiquitous activity, and it is a particularly effective means of sharing emotions (Rimé, 2009). In this sense, narrative construction not only mimics real-life events (Rivers et al., 2007), but it is a real-life event itself.

Finally, a narrative-construction-based measure of AEI has the potential to assess the effects of one's current emotional state while dealing with emotional information. It is because construing a narrative may elicit an emotional response instantly in the narrator (Pasupathi, 2003; Pólya, 2021). Consequently, narrative construction can be considered as an emotional response. This potential makes this approach unique among the available measures of AEI, which fail to take account of the emotions experienced by respondents while completing the measure.

An important limitation of the study is that it focused on only one component of AEI. However, narrative construction might be used to measure all four components of AEI including the ability to understand emotions, since narrative construction deals with emotional information. Furthermore, since narrative construction typically takes place in an interpersonal interaction, and the recipient's emotional reactions may have an influence on the narrator, narrative construction is also potentially sensitive to the emotion perception component of AEI. Finally, since narrative construction has effects on the narrator's current affective state, it makes it possible to integrate the emotional processes with cognitive processes. Although there are open questions regarding the relationships between narrative construction and the four components of AEI, the rich structure of a narrative offers many measurable aspects potentially related to the various components of AEI.

6. Conclusion

The finding that narrative construction reflects the level of the emotion regulation component of AEI may open a new line of research aimed at the development of a new generation of AEI measures that take account of everyday emotional experiences (Rivers et al., 2007). To the authors' knowledge, there is only one similar approach that exemplifies the usefulness of

analyzing narratives of emotional experience in measuring affective functioning (Buck et al., 2014). The existing efforts at using narrative construction for such purposes are supported by those arguing for close structural similarities between emotions and narratives not only in goal structure (Stein & Hernandez, 2007), but in evaluation (Habermas, 2018) and temporal (Pólya, 2021) structure as well.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgement

This work was supported by the Hungarian Scientific Research Fund [grant number K124206].

Data are available at <http://real.mtak.hu/id/eprint/127681>. The study was not preregistered.

References

- Brewer, W. F., Lichtenstein, E. H. (1982). Stories are to entertain: A structural affect theory of stories. Technical Report No. 265. University of Illinois at Urbana-Champaign.
- Bruner, J. S. (1986). *Actual minds, possible worlds*. Harvard University Press.
- Buck B, Ludwig K, Meyer P. S., Penn D. L. (2014). The use of narrative sampling in the assessment of social cognition: The Narrative of Emotions Task (NET). *Psychiatr. Res.* 217(3) 233-239. <https://doi.org/10.1016/j.psychres.2014.03.014>.
- Habermas, T. (2018). *Emotion and Narrative: Subjectifications in Autobiographical Storytelling*. Cambridge University Press. <https://doi.org/10.1017/9781139424615>
- John, O. P., Donahue, E. M., & Kentle, R. L. (1991). *The Big Five Inventory – Versions 4a and 5a*. University of California.
- Labov, W. (1972). *Language in the inner city*. Blackwell.

- László, J., Csertő, I., Fülöp, É., Ferenczhalmy, R., Hargitai, R., Lendvai, P., Péley, B., Pólya, T., Szalai, K., Vincze, O., & Ehmann, B. (2013). Narrative Language as an Expression of Individual and Group Identity: The Narrative Categorical Content Analysis: *SAGE Open* April-June, 1-12. <https://doi.org/10.1177/2158244013492084> 2013 3.
- MacCann, C. & Roberts, R. D. (2008). New paradigms for assessing emotional intelligence: Theory and data. *Emotion*, 8(4), 540–551. <https://doi.org/10.1037/a0012746>.
- Nagy, H., Sellei, B., & Magyaródi, T. (2015). A képességalapú érzelmi intelligencia: Új paradigmák a tesztfejlesztésben és pontozásban. Hazai tapasztalatok az érzelemmegértés és érzelemszabályozás szituációs tesztekkel. *Magyar Pszichológiai Szemle*, 70(4/7), 827-846. <https://doi.org/10.1556/0016.2015.70.4.7>
- Novak, M., Molnar, Zs. M., Szeifert, L., Kovacs, Zs. A., Vamos, P. E., Zoller, R., Keszei, A., & Mucsi, I. (2010). Depressive Symptoms and Mortality in Patients After Kidney Transplantation: A Prospective Prevalent Cohort Study, *Psychosom. Med.* 72(6), 527-534. <https://doi.org/10.1097/PSY.0b013e3181dbbb7d>.
- Pasupathi, M. (2003). Emotion Regulation During Social Remembering: Differences Between Emotions Elicited During an Event and Emotions Elicited when Talking about it. *Memory*, 11(2), 151-163. [10.1080/741938212](https://doi.org/10.1080/741938212).
- Pasupathi, M., Wainryb, C., Mansfield, C. D., & Bourne, S. (2017). The feeling of the story: Narrating to regulate anger and sadness, *Cognit. Emot.*, 31:3, 444-461, <https://doi.org/10.1080/02699931.2015.1127214>.
- Pólya, T. (2021). Temporal structure of narratives reveals the intensity of the narrator's current affective state. *Curr. Psych.* 40(1), 281-291. <https://doi.org/10.1007/s12144-018-9921-8>
- Radloff, L. S. (1977). The CES-D Scale: A Self-Report Depression Scale for Research in the General Population. *Appl. Psychol. Meas.* 1(3):385-401. <https://doi.org/10.1177/014662167700100306>.
- Raven, J. C. (1998). *Raven's progressive matrices*. Oxford Psychologists Press.
- Rimé, B. (2009). Emotion elicits the social sharing of emotion: Theory and empirical review. *Emot. Rev.* 1, 60-85. <https://doi.org/10.1177/1754073908097189>.
- Rivers, S. E., Brackett, M. A., Salovey, P. & Mayer, J. D. (2007). Measuring emotional intelligence as a set of mental abilities. In: G. Matthews, M. Zeidner & R. D. Roberts (Eds.), *The science of emotional intelligence. Knowns and unknowns* (pp. 230-257). Oxford University Press.
- Rózsa, S. (2006). *A Raven-féle Progresszív Mátrixok kézikönyv*. OS Hungary Tesztfejlesztő.

- Rózsa, S., Tárnok, Zs. & Nagy, P. (2020). *A gyermekpszichiátriában alkalmazott kérdőívek, interjúk és tünetbecslő skálák*. EFOP Kiadvány.
- Schank, R. C. (1990). *Tell me a story. A new look at real and artificial memory*. Macmillan Publishing Company.
- Stein, N. L., & Hernandez, M. V. (2007). Assessing Understanding and Appraisals During Emotional Experience. In J. A. Coan, & J. J. B. Allen, (Eds.), *Handbook of Emotion Elicitation and Assessment* (pp. 298-317). Oxford University Press.
- Todorov, T. (1977). *The poetics of prose*. Cornell University Press.