

## Short Research Note

# A Hierarchical Structure of Basic Human Values in a Third-Order Confirmatory Factor Analysis

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**Abstract.** This study investigates the hierarchical structure of Schwartz et al.’s (2012) refined theory of basic human values. Data were collected using a revised version of the Portrait Values Questionnaire, which measures the 19 more narrowly defined values. Respondents from nine countries participated ( $N = 3,261$ ): Finland, Germany, Israel, Italy, New Zealand, Poland, Portugal, Switzerland, and Turkey. Third-order confirmatory factor analyses revealed that the 19 refined values load on values from the earlier catalog of values. Moreover, these values, together with the two new values introduced in the refined theory, load, in turn, on the theoretically postulated four higher-order values that form the third-order level of analysis. Findings support the proposition that the more narrowly defined values in the refined theory of basic human values are subdimensions of the more broadly defined values in the original theory.

**Keywords:** basic human values, hierarchical structure of values, third-order confirmatory factor analysis

Schwartz’s (1992) theory of basic human values is one of the most frequently used frameworks for studying values in cross-cultural, personality, and developmental psychology. Schwartz (2007, p. 712) defined values as “trans-situational goals that vary in importance and serve as guiding principles in the life of a person or a group.” Values form a circular motivational continuum in which adjacent values on the circle are compatible, have similar motivational meanings, and can be pursued simultaneously through the same behavior. In contrast, opposite values on the circle express conflicting motivations. This values circle was originally divided into 10 discrete values: universalism, benevolence, conformity, tradition, security, power, achievement, hedonism, stimulation, and self-direction. Schwartz (1992) further proposed grouping these values into four higher-order values, the four sectors of the value circle, which form two bipolar dimensions. The first dimension contrasts self-transcendence values (universalism and benevolence) with self-enhancement values (power and achievement). The second dimension contrasts openness to change values (stimulation and self-direction) with conservation values (tradition, conformity, and security). Hedonism is located between the openness to change and self-enhancement dimensions.

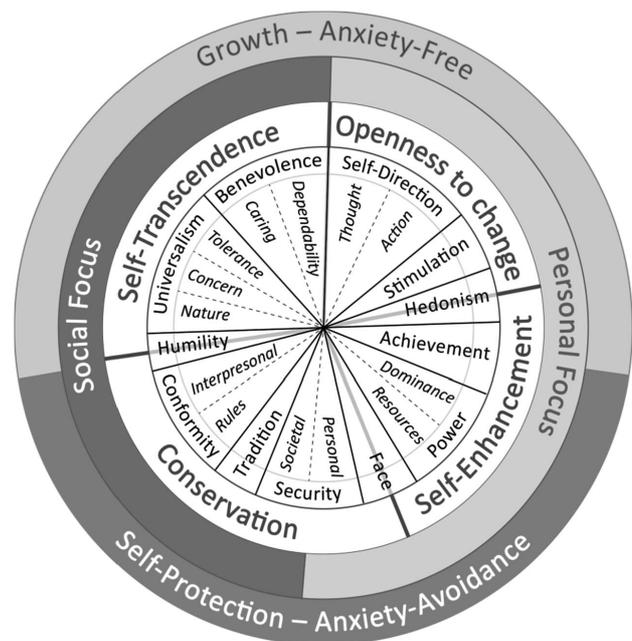


Figure 1. Circular motivational continuum of 19 values in the refined theory of basic human values (adapted from Schwartz et al., 2012).

Table 1

*The four higher-order values, the 10 basic values, and 19 more narrowly defined values in the refined theory of basic human values (Schwartz et al., 2012)*

Four higher-order values (Schwartz, 1992; Schwartz et al., 2012)	10 original values (Schwartz, 1992)	19 more narrowly defined values (Schwartz et al., 2012)
<i>Self-Transcendence</i>	Benevolence – Preservation and enhancement of the welfare of people with whom one is in frequent personal contact  Universalism – Understanding, appreciation, tolerance, and protection for the welfare of <i>all</i> people and of nature	Benevolence-Dependability (BED) – Being a reliable and trustworthy member of the ingroup Benevolence-Caring (BEC) – Devotion to the welfare of ingroup members  Universalism-Tolerance (UNT) – Acceptance and understanding of those who are different from oneself Universalism-Concern (UNC) – Commitment to equality, justice, and protection for all people Universalism-Nature (UNN) – Preservation of the natural environment  Humility (HUM)* – Recognizing one’s insignificance in the larger scheme of things
<i>Conservation</i>	Conformity – The restraint of actions, inclinations, and impulses that are likely to upset or harm others and violate social expectations or norms  Tradition – Respect, commitment, and acceptance of the customs and ideas that traditional culture or religion provides  Security – Safety, harmony, and stability of society, relationships, and self	Conformity-Interpersonal (COI) – Avoidance of upsetting or harming other people Conformity-Rules (COR) – Compliance with rules, laws, and formal obligations  Tradition (TR) – Maintaining and preserving cultural, family, or religious traditions  Security-Societal (SES) – Safety and stability in the wider society Security-Personal (SEP) – Safety in one’s immediate environment  Face (FAC)* – Security and power through maintaining one’s public image and avoiding humiliation
<i>Self-Enhancement</i>	Power – Social status and prestige, control, or dominance over people and resources  Achievement – Personal success through demonstrating competence according to social standards  Hedonism – Pleasure and sensuous gratification for oneself	Power-Resources (POR) – Power through control of material and social resources Power-Dominance (POD) – Power through exercising control over people  Achievement (AC) – Definition unchanged  Hedonism (HE)* – Definition unchanged
<i>Openness to change</i>	Stimulation – Excitement, novelty, and challenge in life  Self-Direction – Independent thought and action, choosing, creating, and exploring	Stimulation (ST) – Definition unchanged  Self-Direction-Action (SDA) – The freedom to determine one’s own actions Self-Direction-Thought (SDT) – The freedom to cultivate one’s own ideas and abilities

*Note.* \*Hedonism is located between the higher-order openness to change and self-enhancement values. Face is located between the higher-order self-enhancement and conservation values. Humility is located between the higher-order conservation and self-transcendence values.

Recently, Schwartz and colleagues (2012) refined the basic values theory. In the refined theory, greater emphasis was placed on the continuum of values. If the values truly form a continuum, then there are many possible and somewhat arbitrary ways to partition the circle. While refining the theory, Schwartz et al. (2012) proposed distinguishing between 19 facets by partitioning some of the 10 values into more narrowly defined values (e.g., security was divided into security-personal and security-societal). They also introduced two new, narrowly defined values between some earlier values. Face was defined as a new value located between security and power, and humility was de-

finied as a new value between conformity and benevolence. They also demonstrated that partitioning these values has a significant added value in the prediction of various attitudes. Table 1 presents the 19 refined value facets, together with the original 10 values and four higher-order values. Figure 1 displays the order of the values on the circle according to the refined theory.

In the original version of the theory, one can distinguish between two levels of values. In the refined theory, it is possible to distinguish between three hierarchical levels. As described in Table 1, the hierarchical structure of values appears as follows: 19 value facets (Schwartz et al., 2012)

combine into 10 basic values (Schwartz, 1992), which, in turn, can be grouped into four higher-order values (Schwartz, 1992; Schwartz et al., 2012). Because values on each higher level consist of values on the lower level and are defined by them, the hierarchical structure can be tested using confirmatory factor analysis (CFA). Thus far, no study has assessed the idea of the three-level hierarchy of values empirically. Several studies have tested the first-order values model with CFA and demonstrated the usefulness of the CFA approach to test the theory (Beierlein, Davidov, Schmidt, Schwartz, & Rammstedt, 2012; Cieciuch & Davidov, 2012; Cieciuch & Schwartz, 2012; Davidov, 2008, 2010; Davidov, Schmidt, & Schwartz, 2008; Saris, Knoppen, & Schwartz, 2013; Schwartz & Boehnke, 2004; Vecchione, Casconi, & Barbaranelli, 2009). One study has tested a second-order CFA in which 19 more narrowly defined values were grouped into the original 10 values (Schwartz et al., 2012). Thus, we follow these previous approaches and used CFA and data from Schwartz et al. (2012) to test the three-level hierarchical structure of values for the first time.

## Method

### Sample and Procedure

The sample consists of 3,261 participants residing in nine countries: Finland ( $n = 334$ , 65% female,  $M_{\text{age}} = 42.3$ ,  $SD_{\text{age}} = 6.1$ ), Germany ( $n = 325$ , 77% female,  $M_{\text{age}} = 23.4$ ,  $SD_{\text{age}} = 5.0$ ), Israel ( $n = 394$ , 65% female,  $M_{\text{age}} = 25.7$ ,  $SD_{\text{age}} = 6.2$ ), Italy ( $n = 388$ , 59% female,  $M_{\text{age}} = 35.6$ ,  $SD_{\text{age}} = 14.5$ ), New Zealand ( $n = 527$ , 68% female,  $M_{\text{age}} = 19.5$ ,  $SD_{\text{age}} = 4.2$ ), Poland ( $n = 547$ , 66% female,  $M_{\text{age}} = 27.0$ ,  $SD_{\text{age}} = 10.0$ ), Portugal ( $n = 295$ , 58% female,  $M_{\text{age}} = 27.0$ ,  $SD_{\text{age}} = 10.4$ ), Switzerland ( $n = 201$ , 70% female,  $M_{\text{age}} = 28.8$ ,  $SD_{\text{age}} = 7.7$ ), and Turkey ( $n = 250$ , 59% female,  $M_{\text{age}} = 21.5$ ,  $SD_{\text{age}} = 1.6$ ). For the analyses, we combined the samples into one dataset and weighted the data to give equal weight to each sample.

Researchers (or trained research assistants) gathered data through self-reported paper-and-pencil or online questionnaires. Participation in the study was voluntary and respondents were assured that their responses would be kept anonymous.

### Questionnaire

A revised version of the Portrait Values Questionnaire (PVQ-5x) was used (Schwartz et al., 2012). The PVQ-5x contains three items to measure each of the 19 values. As in previous versions of the PVQ (e.g., Schmidt, Bamberg, Davidov, Herrmann, & Schwartz, 2007), the questionnaire items contain descriptions of other people, and respondents answer the question "How much like you is this person" on

a scale ranging from 1 (*not like me at all*) to 6 (*very much like me*). In the current PVQ version, each item contains only one sentence. Schwartz (who composed the survey) checked the translations and back-translations (into English) of the questionnaire with the aid of native speakers. This procedure was repeated until everyone agreed that the translated version optimally captured the nuances of each survey item.

Based on multidimensional scaling and first-order CFA, Schwartz et al. (2012) excluded nine items from the analysis. The analyses presented below also drop these items and are thus based on the remaining 48 items of the PVQ-5x. A list of the items is available from the fourth author upon request.

## Analysis

We tested the following third-order CFA model: In the first-order part of the CFA, 48 items loaded on their 19 corresponding values. In the second-order part of the CFA, first-order values loaded on the second-order values according to theory: Benevolence-dependability and benevolence-caring loaded on benevolence; universalism-concern, universalism-nature, and universalism-tolerance loaded on universalism; conformity-interpersonal and conformity-rules loaded on conformity; security-societal and security-personal loaded on security; power-dominance and power-resources loaded on power; and self-direction-thought and self-direction-action loaded on self-direction. In the third-order part of the CFA, second-order values loaded on the higher-order values: Benevolence and universalism loaded on self-transcendence; conformity, tradition, and security loaded on conservation; power and achievement loaded on self-enhancement; stimulation and self-direction loaded on openness to change. According to the refined theory, three values are located between two higher-order values, so we estimated their loadings on these higher-order values: Humility loaded on both self-transcendence and conservation; face loaded on both conservation and self-enhancement; and hedonism loaded on both self-enhancement and openness to change.

Recently, Davidov, Datler, Schmidt, and Schwartz (2011) proposed performing categorical CFA to analyze the PVQ questionnaire items because the 6-point scale in the PVQ is, strictly speaking, categorical rather than continuous. We followed this approach and performed categorical CFA with Mplus 7.1 (Muthén & Muthén, 2012) using weighted least squares means and variance adjusted estimation.

We evaluated the global fit of the third-order CFA models using the comparative fit index (CFI) and the root mean square error of approximation (RMSEA). Because of the large sample, we did not rely on the  $\chi^2$  test. We regarded CFI values  $> .90$  (Bentler, 1990) and RMSEA values  $< .06$  (Browne & Cudeck, 1993) as indications of a reasonable fit. However, according to Kenny and McCoach (2003), in

very complex models CFI tends to decline even if the model is correctly specified. Therefore, Kenny and McCoach (2003) recommended that the RMSEA and the CFI be examined simultaneously in such cases. They recommended accepting the model if the CFI is slightly lower and the RMSEA is acceptable, but rejecting it if both RMSEA and CFI are poor. We followed their approach. Finally, it should be noted that the theoretical structure of values is a circular continuum, which implies that neighboring values may have theoretically justified positive cross-loadings and opposing values may have theoretically justified negative cross-loadings.

## Results

Figure 2 presents the whole model with all standardized loadings and the correlations between the higher order values.

We introduced two cross-loadings to the model described above: achievement on openness and conformity on self-transcendence. Both cross-loadings were introduced on the third level of analysis and involve neighboring values, and the loadings were lower than the main ones. The model presented a reasonable fit to the data. We obtained the following model fit indices: CFI = .884, RMSEA = .055, 90% Confidence Interval [.054, .056],  $\chi^2 = 11,319.2$ , number of degrees of freedom = 1,044. The CFI for the whole model was somewhat below than the cut-off criterion due to model complexity, but the RMSEA displayed an acceptable fit to the data.

## Discussion

The original theory of basic human values differentiated between 10 values that can be grouped into four higher-order values on a motivational continuum (Schwartz, 1992). The refined theory (Schwartz et al., 2012) partitioned the same motivational continuum into 19 more narrowly defined value facets, viewed as subdimensions of the original values, which, in turn, form the four higher-order values. Thus, the refined theory implies a three-level hierarchical structure. This structure of values had never been tested empirically. The present study tested this structure using a third-order CFA. In our analysis, the 19 value facets formed the first-order factors, the 10 basic values, extended by face and humility – new values located between pairs of original values – formed the second-order factors, and the four higher-order values formed the third-order factors.

Our analysis provided empirical support for the hierarchical structure of values in Schwartz's (1992; Schwartz et al., 2012) framework. Factor loadings are substantial, and lower-level values load on higher-level values in line with the theory. Both facets of benevolence load on the benev-

olence value, three facets of universalism load on the universalism value, two facets of self-direction load on the self-direction value, two facets of power load on the power value, two facets of security load on the security value, and two facets of conformity load on the conformity value. Universalism and benevolence together with humility load on the self-transcendence higher-order value; tradition, conformity, and security load on the conservation higher-order value; power and achievement load on the self-enhancement higher-order value; self-direction and stimulation load on the openness to change higher-order value.

Humility is located between self-transcendence and conservation on the value circle. Therefore, we allowed it to load on both higher-order values. It turned out that humility loaded more strongly on self-transcendence than on conservation. Additionally, there was a need to introduce a cross-loading of conformity on self-transcendence. This does not contradict the theory because conformity is located close to the self-transcendence values. Its loading on self-transcendence was, however, lower than those of the self-transcendence values. Face is located on the value circle between conservation and self-enhancement. Therefore, we allowed face to load on both higher-order values. It turned out that it loaded more strongly on the former. Thus, the motivation underlying face in our data seems closer to that of conservation values. Hedonism is located between self-enhancement and openness. Therefore, we allowed it to load on both higher-order values. It turned out that the loading on self-enhancement was very low, which implies that, at least based on our data, hedonism seems to belong more to openness values. This is in keeping with findings in numerous studies (Schwartz, 2006). Additionally, there was a need to introduce a cross-loading of achievement on openness. This too does not contradict the basic assumption of the theory about the circular continuum because achievement is located next to openness to change values on the circle. However, this loading was considerably lower than its main loadings on self-enhancement. Although all values are characterized in positive terms and are considered to be positive, desirable goals, we observed a small negative correlation between self-transcendence and self-enhancement. This dimension of values forms the strongest opposition of values located on the circle.

Analyses were carried out on data collected with an experimental version of the questionnaire, the PVQ-5x, which has been used in previous research on the refined theory of basic human values (Schwartz et al., 2012). In future research, the instrument and particularly the nine items that had to be dropped from the analysis due to low loadings should be improved, and the analysis should be repeated with the new items. Nevertheless, the obtained results are encouraging and provide support for the hierarchical structure of values as defined by the refined theory. Specifically, the more narrowly defined values in the refined version of the theory are subdimensions of the more broadly defined values postulated in the original theory.

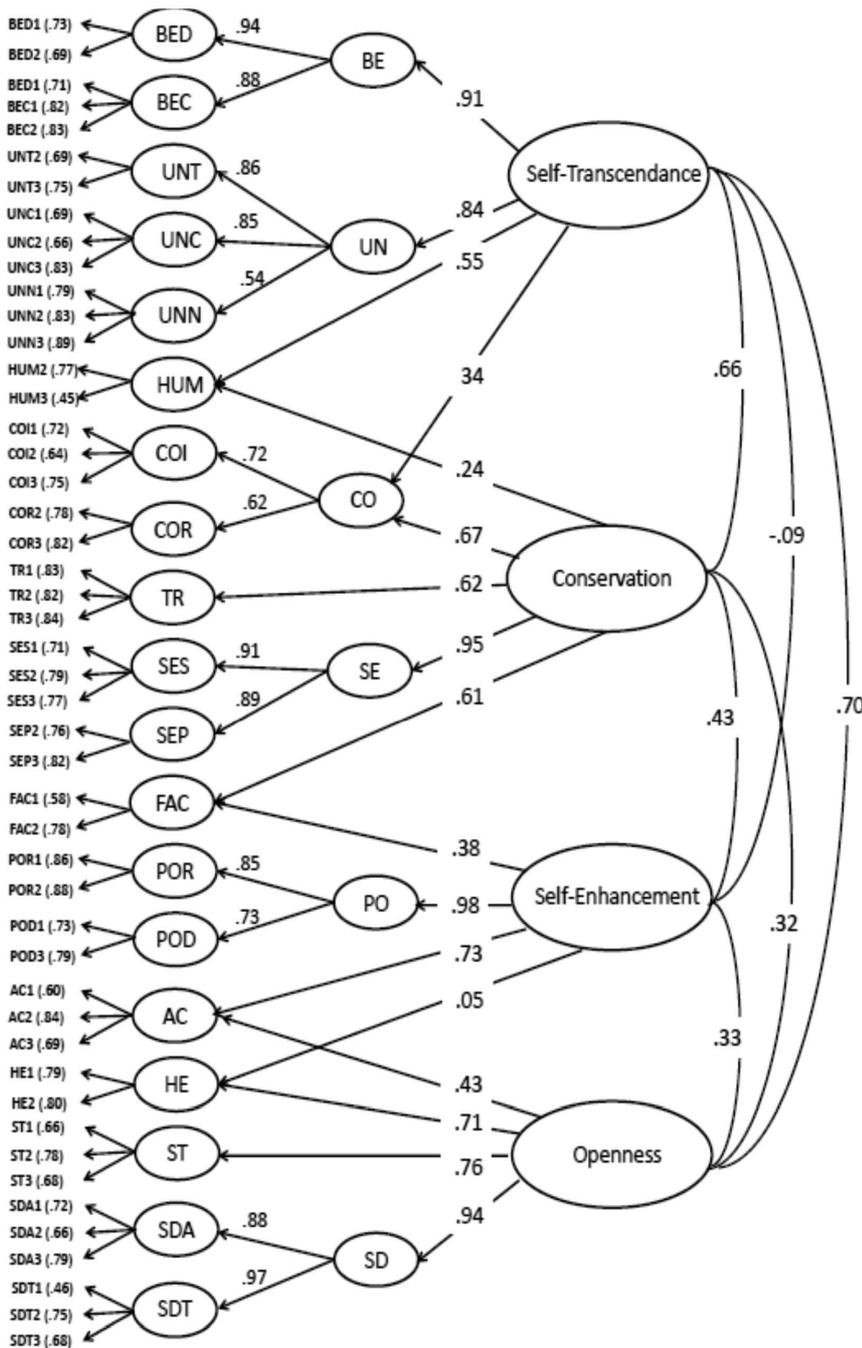


Figure 2. Third-order confirmatory factor analysis (item factor loadings are given in brackets). Abbreviations are explained in Table 1.

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### References

Beierlein, C., Davidov, E., Schmidt, P., Schwartz, S. H., & Rammstedt, B. (2012). Testing the discriminant validity of Schwartz' Portrait Value Questionnaire items: A replication and exten-

- sion of Knoppen and Saris (2009). *Survey Research Methods*, 6, 25–36.
- Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin*, 107, 238–246. doi 10.1037/0033-2909.107.2.238
- Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.), *Testing structural equation models* (pp. 136–162). Newbury Park, CA: Sage.
- Cieciuch, J., & Davidov, E. (2012). A comparison of the invariance properties of the PVQ-40 and the PVQ-21 to measure human values across German and Polish samples. *Survey Research Methods*, 6, 37–48.
- Cieciuch, J., & Schwartz, S. H. (2012). The number of distinct basic values and their structure assessed by PVQ-40. *Journal of Personality Assessment*, 94, 321–328. doi 10.1080/00223891.2012.655817
- Davidov, E. (2008). A cross-country and cross-time comparison of the human values measurements with the second round of the European Social Survey. *Survey Research Methods*, 2, 33–46.
- Davidov, E. (2010). Testing for comparability of human values across countries and time with the third round of the European Social Survey. *International Journal of Comparative Sociology*, 51, 171–191. doi 10.1177/0020715210363534
- Davidov, E., Datler, G., Schmidt, P., & Schwartz, S., H. (2011). Testing the invariance of values in the Benelux countries with the European Social Survey: Accounting for ordinality. In E. Davidov, P. Schmidt, & J. Billiet (Eds.), *Cross-cultural analysis: Methods and applications* (pp. 151–117). New York: Routledge.
- Davidov, E., Schmidt, P., & Schwartz, S. H. (2008). Bringing values back in: The adequacy of the European Social Survey to measure values in 20 countries. *Public Opinion Quarterly*, 72, 420–445. doi 10.1093/poq/nfn035
- Kenny, D. A., & McCoach, D. B. (2003). Effect of the number of variables on measures of fit in structural equation modeling. *Structural Equation Modeling*, 10, 333–351. doi 10.1207/S15328007SEM1003\_1
- Muthén, L. K., & Muthén, B. O. (2012). *Mplus user's guide* (7th ed.). Los Angeles, CA: Muthén & Muthén.
- Saris, W. E., Knoppen, D., & Schwartz, S. H. (2013). Operationalizing the theory of human values: Balancing homogeneity of reflective items and theoretical coverage. *Survey Research Methods*, 7, 29–44.
- Schmidt, P., Bamberg, S., Davidov, E., Herrmann, J., & Schwartz, S. H. (2007). Die Messung von Werten mit dem "Portraits Value Questionnaire" [The measurement of values with the "Portraits Value Questionnaire"]. *Zeitschrift für Sozialpsychologie*, 38, 249–263.
- Schwartz, S. H. (1992). Universals in the content and structure of values: Theory and empirical tests in 20 countries. In M. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 25, pp. 1–65). New York: Academic Press.
- Schwartz, S. H. (2006). Les valeurs de base de la personne: Théorie, mesures et applications [Basic human values: Theory, measurement, and applications]. *Revue Française de Sociologie*, 47, 249–288.
- Schwartz, S. H. (2007). Universalism values and the inclusiveness of our moral universe. *Journal of Cross-Cultural Psychology*, 38, 711–728.
- Schwartz, S. H., & Boehnke, K. (2004). Evaluating the structure of human values with confirmatory factor analysis. *Journal of Research in Personality*, 38, 230–255. doi 10.1016/S0092-6566(03)00069-2
- Schwartz, S. H., Cieciuch, J., Vecchione, M., Davidov, E., Fischer, R., Beierlein, C., . . . Konty, M. (2012). Refining the theory of basic individual values. *Journal of Personality and Social Psychology*, 103, 663–688. doi 10.1037/a0029393
- Vecchione, M., Casconi, T., & Barbaranelli, C. (2009). Assessing the circular structure of the Portrait Values Questionnaire. *European Journal of Psychological Assessment*, 25, 231–238. doi 10.1027/1015-5759.25.4.231

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