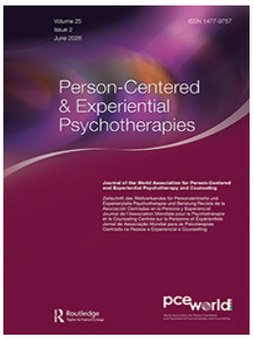

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Measuring the Rogerian concept of the fully functioning person in Chinese: translation and validation of the simplified Chinese version of the Strathclyde Inventory (C-SI-20)

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ABSTRACT

The current study translated and validated the simplified Chinese version of the 20-item Strathclyde Inventory (C-SI-20), a self-report measure of the fully functioning person based on Rogers' theory. In Sample 1, 450 Chinese-speaking adults completed the C-SI-20 to assess its internal consistency, test – retest reliability, and construct validity. Exploratory factor analysis (EFA) supported a two-factor structure – experiential fluidity and experiential constriction – consistent with findings from the original English version. In Sample 2, data from 226 Chinese-speaking adults were used to conduct confirmatory factor analysis (CFA) and exploratory structural equation modeling (ESEM). Among the models tested, the bifactor ESEM model demonstrated the best fit, indicating that the C-SI-20 captures both a general factor and two specific subdimensions. These findings support the use of the total score as a valid indicator of optimal psychological functioning, while also acknowledging the scale's multidimensional nature. The C-SI-20 appears to be a reliable and valid instrument for use in Chinese-speaking populations and contributes to the culturally informed study of person-centered theory.

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Fully functioning person; personality assessment; psychometrics; Chinese validation; culture; Strathclyde Inventory

Introduction

Humanistic psychology emerged as the 'third force' in psychology, offering an alternative to both psychoanalysis and behaviorism by emphasizing the realization of human potential (Bugental, 1964). Carl Rogers, one of the principal founders of humanistic psychology, had a profound influence in multiple fields, including psychology, education, counseling, and psychotherapy, across the world (Thorne, 2007). His theory continues to provide an enduring foundation for both professional practice and empirical research. The well-known theory of the fully functioning person outlines Rogers' view of optimal psychological functioning. He described it as a state in which an individual demonstrates optimal

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psychological adjustment and maturity, complete congruence between self and experience, full openness to experience, and complete extensionality. Extensionality, as used in this framework, refers to the individual's capacity to perceive reality as it is – anchored in specific, differentiated experiences – rather than through abstract labels or rigid preconceptions, allowing for flexible, fact-based responses to the present moment (Rogers, 1959). The Strathclyde Inventory (SI) is a scale developed to assess the key characteristics of the fully functioning person (Freire, 2007). To date, the SI has been translated into Arabic, French, German, Russian, and Spanish, supporting its cross-cultural applicability (Alhimaidi, 2019; Bobzien, 2022; Stephen et al., 2024; Zech et al., 2018; Zhigulina & Ladneva, 2021). Notably, the French, German, and Russian versions of the SI consist of 22 items, and therefore do not fully correspond to the 20-item version used in the current study. The present study aims to extend this work by translating the SI into simplified Chinese and evaluating its psychometric properties within Chinese-speaking populations.

Conceptualization of the fully functioning person

Carl Rogers described the fully functioning person as someone who is constantly developing, rather than fixed in personality or behavior. Such a person cannot be defined by specific actions, as their behavior is shaped by the demands of each moment. What remains consistent is their ability to adapt flexibly to new situations and to continue growing toward their full potential.

A key trait of the fully functioning person is openness to experience. This means being free from defensiveness and accepting all internal and external experiences without distorting them to protect a rigid self-concept. Thoughts, feelings, memories, and bodily sensations are all available to awareness and accepted as they are. This openness allows the person to live authentically and respond to life with greater clarity and honesty. Living in this way leads to a strong connection with the present. Because each moment is seen as new and unique, the person does not rely on old patterns or expectations to guide their actions. Instead, they respond creatively to what is happening now. The self is shaped by experience and remains flexible, adapting as new situations arise. This way of being encourages personal growth and helps the person remain grounded and responsive.

The fully functioning person also relies on their inner sense of direction when making decisions. Because they are open to all aspects of their experience, they have access to a wide range of information – memories, needs, emotions, social cues – and can weigh these factors to guide their actions. Rogers compared this to a well-tuned internal compass that helps the person choose the most satisfying and effective course, even without conscious deliberation. Mistakes may still happen, but because the person remains open to feedback, they can quickly adjust their behavior. This inner trust allows the person to act without relying on external approval or imposed standards. Instead, they evaluate their actions based on their own values and experiences. This self-guided approach fosters a sense of worth that is not dependent on meeting others' expectations. Because of this, the fully functioning person can relate to others with honesty and respect, forming genuine and fulfilling relationships.

In essence, the fully functioning person exemplifies a way of being that is both deeply individual and inherently relational. They are engaged in a lifelong process of becoming – open, flexible, self-aware, and guided by the totality of their experiences. By embracing

this process, they live authentically in the present while continually evolving toward greater psychological wholeness.

Psychometric properties of the SI

Freire (2007) identified six core characteristics from Rogers' descriptions of the fully functioning person: openness to experience, trust in one's organism, an internal locus of evaluation, willingness to be a process, unconditional positive self-regard, and the ability to live in harmony with others. Based on these characteristics, an initial pool of 51 items was developed, which was subsequently reduced to 31 items.The SI-31 demonstrated good temporal stability, with an intraclass correlation coefficient (ICC) of .66, and excellent internal consistency, indicated by a Cronbach's alpha of .94. Construct validity was supported by expected correlations with relevant psychological constructs. Specifically, SI-31 scores were significantly negatively associated with psychological distress ($r = -.66$), as measured by the Clinical Outcomes in Routine Evaluation – Outcome Measure (CORE-OM; Evans et al., 2002), and with neuroticism ($r = -.60$). Significant positive associations were found with agreeableness ($r = .46$), extraversion ($r = .48$), conscientiousness ($r = .42$), and openness ($r = .22$), as measured by the NEO Five-Factor Inventory (McCrae & Costa, 2013).

Stephen and Elliott (2022) used data collected on the SI-31 from a clinical population to develop a 20-item version (SI-20) and then refined into a 12-item version for more efficient use in clinical settings. The five-category rating scale (0–4; never, only occasionally, sometimes, often, all or most of the time) was found to function well when evaluated using Rasch modeling. Results indicated that the SI meets the requirements for unidimensionality under the stringent assumptions of the Rasch model, supporting its use as a psychometrically robust single-factor instrument. Additionally, the SI demonstrated sensitivity to change across the course of counseling, comparable to that of other widely used outcome measures. Notably, it may capture a higher degree of change than is typically observed in measures assessing experiential functioning, highlighting its potential utility for clinical assessment and outcome monitoring.

Although Rasch modeling has supported the use of the SI as a single factor instrument, principal component analysis conducted with SI data (Freire, 2007; Zech et al., 2018) has identified a two-factor model that accounts for approximately 40% of the total variance (Freire = 43.41%; Zech et al. = 42.44%), indicating a clear separation of items. The first factor, labeled experiential fluidity, comprised all positively worded items, while the second factor, experiential constriction, included all negatively worded items. According to Freire (2007), experiential fluidity was significantly negatively correlated with psychological distress ($r = -.59$) and neuroticism ($r = -.45$), and showed moderate positive correlations with extraversion ($r = .48$), agreeableness ($r = .46$), and conscientiousness ($r = .42$), along with a small positive correlation with openness ($r = .28$). In contrast, experiential constriction was significantly positively associated with psychological distress ($r = .56$) and neuroticism ($r = .57$), and negatively associated with extraversion ($r = -.20$), agreeableness ($r = -.31$), and conscientiousness ($r = -.23$). Its correlation with openness ($r = -.04$) was negative but non-significant. Rather than investigating these relationships within a two-factor model, Zech et al. (2018) conducted correlations between these variables and SI total scores. They found

that the SI (as a whole) negatively correlated with neuroticism ($r = -.46$), anxiety ($r = -.54$) and depression ($r = -.58$) and positively correlated with extraversion ($r = .38$), agreeableness ($r = .16$) and conscientiousness ($r = .33$). All correlations were statistically significant except openness ($r = .09$). There is an ongoing search for understanding of the factor structure of the SI: whether the two-factor model is evidence of a response bias caused by the inclusion of positively and negatively worded items or is detecting something qualitatively different. Zech et al. (2018) concluded by advocating for a 'hybrid model of an over-arching Congruence [experiential fluidity]-Incongruence [experiential constriction] dimension, with two subfactors' (p. 176) although they did not test this proposal with their data. Indeed, to the best of our knowledge, the factor structure of the original English version and its translated counterparts, has not yet been confirmed through confirmatory factor analysis (CFA) or other advanced statistical techniques.

The Chinese context

There are two important reasons for developing a reliable and valid Chinese version of the SI. First, client-centered therapy has been one of the dominant approaches in psychotherapy practice in China (Qian & Chen, 1993). A culturally and linguistically appropriate version of the SI would therefore be a valuable tool for both researchers and practitioners to assess key aspects of psychological functioning aligned with the person-centered framework. Its availability could enhance the empirical evaluation of therapeutic outcomes and support culturally relevant research on person-centered constructs.

Second, translating and validating the SI in Chinese also contributes to a broader cross-cultural examination of Rogers' theory of the fully functioning person. Ongoing debates question whether Rogers' framework is inherently biased by Western, individualistic cultural values – particularly its emphasis on autonomy and independence (Van Belle, 1990). Critics argue that these values reflect the socio-cultural context in which the theory was developed and may not fully resonate with individuals from collectivist cultures, such as China. Conversely, other scholars contend that Rogers' theory does not promote individualism at the expense of relational connectedness. They argue that person-centered theory maintains a dual emphasis on both individuality and interpersonal interdependence (Kim, 2018; Mearns et al., 2005).

Additionally, beyond the dichotomous framework of cultural tendencies, a third perspective has been proposed. Tamis-LeMonda et al. (2008) argue that the boundaries between individualism and collectivism are blurred, with both orientations coexisting within individuals and societies. Thus, collectivistic and individualistic value systems should be understood as probabilistic rather than deterministic: they represent central tendencies, not fixed categories. That is, individuals from a given culture are more likely – but not guaranteed – to subordinate personal goals to group goals in collectivist contexts, or to prioritize individual aspirations over group concerns in individualist contexts. This perspective allows for intra-cultural variability and for the coexistence of both orientations within individuals and societies. Echoing the notion that the relationship between individualism and collectivism is not an either-or proposition, Rogers emphasized that individual psychological growth fosters healthier, more realistic forms of social interaction rather than isolation or maladjustment (Rogers, 1959).

Proctor's (2025) perspective further explains how the person-centered approach can embody both individualist and collectivist elements, while also extending beyond this binary framework. She contends that congruence is not merely an inward-focused self-awareness housed within an autonomous individual, but a relational, intersubjective process embedded within the broader context of the world and the universe. This interpretation reframes person-centered psychology as neither individualist nor collectivist in a binary sense, but as integrative – recognizing the deep interconnectedness between the individual and the systemic whole. As Rogers (1961, p. 26) famously stated, 'what is most personal is most general,' implying that authentic connection to one's internal experience is simultaneously a gateway to broader harmony.

Whereas individualism views people as fundamentally separate and autonomous, and collectivism emphasizes embeddedness within a defined social group, both frameworks ultimately operate within a paradigm of separation. In individualist systems, the self is positioned in contrast to others; in collectivist systems, the group itself becomes a bounded unit, distinct from other groups. As such, collectivism may not be fundamentally different from individualism, but rather a shift in the locus of competition – from the individual to the group level. In contrast, person-centered theory, particularly as interpreted through an intraconnected perspective, transcends this dichotomy by recognizing the illusion of separateness (Proctor, 2025). It situates psychological development not in the dominance of either independence or interdependence, but in the openness to experiencing ourselves as part of a greater whole-one that is larger than any 'individual' or 'group.'

However, researchers may still inadvertently introduce cultural biases into the interpretation and application of the theory – particularly when operating within predominantly Western, Educated, Industrialized, Rich, and Democratic (WEIRD) contexts (Muthukrishna et al., 2020). WEIRD cultural frameworks often prioritize autonomy, self-expression, and internal consistency as markers of psychological maturity, which can subtly shape research questions, theoretical interpretations, and the construction of assessment tools.

Given these differing perspectives, the availability of a Chinese version of the SI can serve as a critical foundation for further empirical investigation. It enables researchers to examine whether the core constructs of the fully functioning person manifest similarly across cultures, and how cultural values such as collectivism and interdependence may shape individual psychological development. In doing so, it contributes to a more nuanced understanding of person-centered theory within specific cultural contexts, as well as the distinction between universal and culture-specific aspects of psychological functioning.

This study

This study aimed to translate the SI into simplified Chinese and evaluate its psychometric properties among Chinese adults. The C-SI-20 was assessed for internal consistency, test – retest reliability, and construct validity, including convergent, criterion-related, and discriminant validity. Additionally, exploratory factor analysis (EFA) was used to examine whether the previously identified two-factor solution could be replicated in the Chinese context. A separate sample was subsequently recruited to confirm the factor structure of

the C-SI-20. Following the decision tree for model selection proposed by Alamer and Marsh (2022), CFA was employed to test model fit, with exploratory structural equation modeling (ESEM) considered when appropriate.

Method

Participants and procedure

The study received ethical approval from the Department of Psychological Sciences & Health Ethics Committee at the University of Strathclyde on the 15 August 2023 (Reference number: 75.15 June 2023). For Sample 1, a total of 450 Chinese-speaking participants aged 18 and above were recruited through two popular social media platforms in China: Douban and Sina Weibo. The recruitment message explained that the purpose of the study was to explore how Chinese populations interpret and respond to the SI. Participants were informed that the data would be compared with responses from individuals in other regions and cultural contexts, with the aim of investigating whether people from different linguistic and cultural backgrounds interpret the items of the SI with equivalent meaning and relevance. The sample primarily consisted of young adults, with 226 participants (50.2%) aged 18–24, and 153 participants (34.0%) aged 25–34. The majority of participants identified as female ($n = 367$, 81.6%) and Asian in ethnicity ($n = 445$, 98.9%). Most participants were residing in China ($n = 401$, 89.1%), and nearly all reported Chinese as their first language ($n = 446$, 99.1%).

Participants completed an online survey hosted on Qualtrics, which began with demographic questions regarding age, gender, ethnicity, country of residence, and whether Chinese was their first language. This was followed by the Chinese version of the SI and several additional psychological measures. The first round of data collection for Sample 1 was conducted between 3 November and 22 December 2023. At the end of the survey, participants were invited to indicate whether they would be willing to complete a follow-up survey two weeks later. Those who agreed received an e-mail with a link to the second survey, which included the C-SI-20 for retest purposes.

The second survey was open from 6 November 2023, to 12 January 2024. A total of 157 participants completed the second survey. Among this follow-up group, 61 participants (38.9%) were aged 18–24, and 60 participants (38.2%) were aged 25–34. The majority identified as female ($n = 127$, 80.9%), with 25 identifying as male (15.9%). All participants reported Asian ethnicity, and 136 individuals (86.6%) were residing in China at the time of participation.

In Sample 2, which comprised a total of 282 participants and was collected between 4 February and 8 March 2024, using the same social media platforms (Douban and Sina Weibo) as in Sample 1. The recruitment message clearly stated that individuals who had previously completed the survey should not participate again, to ensure the integrity and independence of the new sample. The demographic pattern was similar to that of Sample 1, with the majority of participants aged 18–24 ($n = 175$, 62.1%) and 25–34 ($n = 81$, 28.7%). Most participants identified as female ($n = 240$, 85.1%), while 41 identified as male (14.5%). All participants identified as Asian, and the vast majority ($n = 279$, 98.9%) were residing in China. All participants reported Chinese as their first language. See Table 1 for detailed demographic characteristics of both samples.

Table 1. Demographic characteristics of Sample 1.

		Sample 1				Sample 2	
		Main Study ($N = 450$)		Retest ($N = 157$)		$N = 282$	
		N	%	N	%	N	%
Age	18–24	226	50.2	61	38.9	175	62.1
	25–34	153	34	60	38.2	81	28.7
	35–44	36	8	23	14.6	13	4.6
	45–54	22	4.9	9	5.7	9	3.2
	55–64	11	2.4	4	2.5	4	1.4
	Missing data	2	0.4	0	0	0	0
Gender	Male	72	16	25	15.9	41	14.5
	Female	367	81.6	127	80.9	240	85.1
	Non-binary	3	0.7	2	1.3	0	0
	Prefer not to say	5	1.1	3	1.9	0	0
	Missing data	3	0.7	0	0	1	0.4
Ethnicity	Asian	445	98.9	157	100	282	100
	Black/African/Caribbean	1	0.2	0	0	0	0
	Prefer not to say	1	0.2	0	0	0	0
	Missing data	3	0.7	0	0	0	0
Country	France	2	0.4	2	1.3	0	0
	Netherlands	1	0.2	0	0	0	0
	Canada	1	0.2	0	0	0	0
	Malaysia	2	0.4	2	1.3	0	0
	United States	6	1.3	3	1.9	0	0
	Thailand	1	0.2	0	0	0	0
	Singapore	2	0.4	2	1.3	0	0
	United Kingdom	24	5.3	11	7	0	0
	China	401	89.1	136	86.6	279	98.9
	Russia	0	0	0	0	1	0.4
	Missing data	10	2.2	1	0.6	2	0.7
First language?	Yes	446	99.1	157	100	282	100
	No	2	0.4	0	0	0	0
	Missing data	2	0.4	0	0	0	0

Measures

The simplified Chinese version of the SI (C-SI-20) was translated from the SI-20 (Stephen & Elliott, 2022), a 20-item self-report instrument that uses a five-point Likert-type scale to assess Rogers' concept of the fully functioning person. The SI-20 is a shortened version of the original 31-item SI (Freire, 2007), developed to offer a more efficient measure while retaining the core theoretical dimensions and a sufficient range of items to capture potential cultural differences. The translation process followed established procedures for cross-cultural adaptation, including forward translation, back-translation, and expert review (Beaton et al., 2000). Initially, two bilingual experts independently translated the original English version into simplified Chinese. They then compared their translations, discussed discrepancies, and produced a consensus version. A third bilingual expert in interpretation and translation, who was blind to the original scale, conducted a back-translation of the simplified Chinese version into English. Any differences between the original and back-translated versions were reviewed and resolved through discussion among the translators and a panel of experts in person-centered and positive psychology. This collaborative process ensured both semantic accuracy and conceptual equivalence. The final version of C-SI-20 is provided in Appendix A. In this study, the Cronbach's alpha for the total scale was .79, indicating acceptable internal consistency.

The Chinese version of the Authenticity Scale (Xia et al., 2022), translated from the original instrument developed by Wood et al. (2008), was used to assess dispositional authenticity. The scale consists of 12 items across three subscales: self-alienation (e.g. 'I feel as if I do not know myself very well'), authentic living (e.g. 'I am true to myself in most situations'), and accepting external influence (e.g. 'I usually do what other people tell me to do'), with four items per subscale. Participants respond using a 7-point Likert-type scale ranging from 1 (does not describe me at all) to 7 (describes me very well). For the total authenticity score, items from the self-alienation and accepting external influence subscales are reverse-scored, such that higher total scores indicate greater authenticity. Xia et al. (2022) reported Cronbach's alpha coefficients ranging from .70 to .87 across the subscales, and test – retest reliability over a two-week interval ranging from .53 to .67. The scale demonstrated good criterion validity and acceptable construct replicability, supporting its reliability and validity in Chinese populations. In the present study, Cronbach's alpha coefficients were .86 for the total scale, .82 for self-alienation, .69 for authentic living, and .86 for accepting external influence.

The Chinese version of the Mini-International Personality Item Pool (Mini-IPIP) Scale (Li et al., 2012) was translated from the original Mini-IPIP (Donnellan et al., 2006). This 20-item instrument measures the Big Five personality traits – neuroticism, extraversion, agreeableness, conscientiousness, and intellect/imagination – using four items for each trait. Each item is a self-descriptive statement (e.g. 'Seldom feel blue'), and participants are asked to rate how well each statement generally describes them using a 5-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). Estimates of internal consistency for the Mini-IPIP subscales have been found to be acceptable, with Cronbach's alpha coefficients ranging from .79 to .84. The scale has also demonstrated acceptable construct validity in previous research (Li et al., 2012). In the present study, Cronbach's alpha coefficients for the subscales were as follows: neuroticism = .76, extraversion = .77, agreeableness = .71, conscientiousness = .58, and intellect/imagination (openness) = .68.

The Socially Desirable Response Set Five-Item Survey (Hays et al., 1989) was used to assess the tendency of participants to respond in a socially desirable manner (e.g. 'No matter who I'm talking to, I'm always a good listener'). The scale consists of five items rated on a Likert scale ranging from 1 (definitely true) to 5 (definitely false). Scoring is binary: only specific extreme responses are scored as 1, while all other responses are scored as 0. Hays et al. (1989) reported Cronbach's alpha coefficients ranging from .66 to .68. The Chinese version demonstrated acceptable internal consistency in prior research with an alpha of .74 (Wang et al., 2018). In the present study, the scale yielded a Cronbach's alpha of .55.

Data analysis

Reliability

The internal consistency reliability and test – retest reliability of the SI were examined using Cronbach's alpha and the ICC, respectively. All correlation and reliability analyses were conducted using SPSS version 29.0.

Convergent, criterion-related, and discriminant validity

As part of construct validity, both convergent and criterion-related validity of the SI were evaluated in this study. Convergent validity was assessed using the Authenticity Scale (Xia et al., 2022), based on the theoretical assumption that authenticity is a core characteristic of the fully functioning person and, therefore, should be positively associated with optimal psychological functioning. Specifically, higher SI scores were expected to correlate positively with the authentic living subscale and negatively with self-alienation and accepting external influence subscales.

Criterion-related validity was examined using the Mini-IPIP Scale (Li et al., 2012), which measures the Big Five personality traits. Based on Rogers' theory, SI scores were hypothesized to be positively associated with extraversion, agreeableness, conscientiousness, and intellect/imagination, and negatively associated with neuroticism.

Given that social desirability bias is a known threat to the validity of self-report measures (King & Bruner, 2000), the Socially Desirable Response Set Five-Item Survey was included to assess and control for its potential influence on participants' responses. In addition, this measure was used to examine discriminant validity, with the expectation that SI scores would show no significant association with socially desirable responding. Pearson's correlation was used to examine the relationships between scale scores. According to Cohen (1992), correlation coefficients of .10, .30, and .50 represent small, medium, and large effect sizes, respectively.

Exploratory factor analysis

Although the SI is an established scale, the simplified Chinese version is newly developed. Therefore, EFA was conducted using SPSS version 29.0 to examine the underlying structure of the C-SI-20. To assess the suitability of the data for EFA, the Kaiser – Meyer – Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity were examined. A KMO value of .80 or above was considered ideal, and a significant Bartlett's Test ($p < .05$) indicated that the correlations among items were sufficiently large for factor analysis (Shrestha, 2021).

Negatively worded items were reverse-scored prior to analysis to ensure consistent item directionality (Watkins, 2018). Principal axis factoring was used as the extraction method, along with promax oblique rotation, given that the underlying factors were expected to be correlated. The scree plot and the proportion of explained variance were used to guide the determination of the number of factors to retain. Factor loadings of .30 or greater were considered acceptable for interpretation (Ferguson & Cox, 1993).

Confirmatory factor analysis and exploratory structural equation modeling

Following the exploration of the factor structure through EFA, confirmatory methods were employed with Sample 2 to validate the proposed model. CFA was used to test the hypothesized structure, while ESEM was considered as an alternative approach to account for potential cross-loadings among items when necessary, it also provided greater flexibility in modeling the underlying factor structure compared to traditional CFA. ESEM represents a methodological advancement that integrates EFA within the broader Structural Equation Modeling (SEM) framework. Unlike traditional CFA, which requires researchers to impose strict zero-loading constraints on all non-target items, ESEM allows for cross-loadings among items, providing a more flexible and realistic representation of

the data structure. This integration enables the simultaneous inclusion of both exploratory and confirmatory factors within the same model, allowing researchers to capture the complexity of psychological constructs without over-restrictive assumptions. ESEM combines the exploratory nature of EFA with the statistical sophistication and modeling capabilities of CFA/SEM – such as estimating measurement error, testing model fit indices, and incorporating latent variable regressions – thus offering a more nuanced and comprehensive approach to evaluating measurement models (Morin et al., 2020). This approach aligns with the recommended decision-making framework for selecting appropriate measurement models (Alamer & Marsh, 2022). According to this framework, ESEM should be directly compared with CFA. If both models yield comparable fit indices and parameter estimates, the more parsimonious CFA model is generally preferred. In cases where theoretical justification exists for the presence of a general underlying factor, bifactor CFA and bifactor ESEM models should also be included in the comparison. Accordingly, all relevant models were estimated and evaluated in this study.

Six models were tested and compared: (1) a unidimensional CFA model, assuming all items load onto a single latent factor representing optimal psychological functioning; (2) a correlated two-factor CFA model, separating positively and negatively worded items into experiential fluidity and experiential constriction; (3) a correlated traits – correlated methods (CT-CM) model, including a method factor to account for the shared variance among negatively worded items, thereby disentangling wording effects from substantive structure to better evaluate the scale's psychometric dimensionality (4) a bifactor CFA model, including one general factor and two orthogonal specific factors; (5) a two-factor ESEM model, which allows for cross-loadings while maintaining the correlated factor structure; and (6) a bifactor ESEM model, combining bifactor and ESEM approaches to account for a general construct and item-specific variance with more flexibility.

The CT-CM model provides a powerful framework for disentangling substantive variance from variance attributable to method effects, such as item wording. In the context of psychometric evaluations – particularly for instruments like the SI, which includes both positively and negatively worded items, the CT-CM model incorporates a method factor to account for shared variance among similarly worded items (e.g. negatively phrased ones), enabling researchers to isolate the influence of wording effects from the underlying trait structure (Morin et al., 2020). This is important because, in the case of the SI, there has been ongoing debate as to whether its commonly observed two-factor solution reflects genuine multidimensionality of the construct or is instead an artifact of item wording. By modeling method variance explicitly, the CT-CM approach allows for a more accurate assessment of the scale's psychometric dimensionality, helping determine whether the factors represent substantively meaningful traits or are confounded by linguistic features. When combined with frameworks like ESEM, CT-CM modeling enhances both model flexibility and validity, offering a more robust test of the inventory's intended structure.

Given the ordinal nature of the Likert-type response format and the relatively small sample sizes, model estimation was conducted using the weighted least squares mean and variance adjusted (WLSMV) method. Model fit was assessed using multiple fit indices based on established cutoff criteria (Hooper et al., 2008; Kline, 2015), including the root-mean-square error of approximation (RMSEA; values $< .08$ indicate acceptable fit), the comparative fit index (CFI; values $> .90$ indicate acceptable fit), and the standardized root mean square residual (SRMR; values $< .08$ indicate acceptable fit).

Sample size plays a critical role in ensuring the reliability and validity of factor analytic procedures. For exploratory and confirmatory factor analyses, it is commonly recommended to have at least five to ten participants per item to obtain stable and interpretable factor solutions (Gorsuch, 2013). In the context of SEM, a minimum of 200 participants is often considered acceptable to achieve sufficient statistical power and produce robust parameter estimates (Kline, 2015). These guidelines serve as widely accepted benchmarks for evaluating the adequacy of sample sizes in psychometric research. The sample sizes for the current study – 450 in Sample 1 and 282 in Sample 2 – exceed commonly recommended thresholds for achieving adequate statistical power in factor analysis and ESEM.

Results

Exploratory analyses by gender and age

Independent samples t-tests were conducted to examine differences in SI scores across gender. In Sample 1, Round 1, female participants had a mean score of 2.41 ($SD = .458$), while male participants had a mean score of 2.34 ($SD = .456$). The difference was not statistically significant, $t(383) = -1.14$, $p = .254$. In Round 2, female participants had a mean score of 2.40 ($SD = .519$), and male participants had a mean score of 2.37 ($SD = .441$), again showing no significant difference, $t(148) = -.310$, $p = .757$. No significant gender difference was found in SI scores in Sample 2, $t(278) = -.412$, $p = .680$, with male participants ($M = 2.35$, $SD = .445$) and female participants ($M = 2.38$, $SD = .421$) scoring similarly.

A one-way ANOVA was conducted to examine whether SI scores differed significantly across five age groups. The analysis revealed a statistically significant difference in Sample 1, Round 1, but not in Round 2 or Sample 2. For Sample 1, Round 1, the results were $F(4, 386) = 2.95$, $p = .020$, $\eta^2 = .030$. Post hoc comparisons indicated that significant group differences were found between the 45–54 age group ($M = 2.67$, $SD = .341$) and the 18–24 group ($M = 2.35$, $SD = 4.34$), $p = .010$, as well as the 25–34 group ($M = 2.40$, $SD = .499$), $p = .045$. For Sample 1, Round 2, no significant difference was found, $F(4, 149) = 1.58$, $p = 182$, $\eta^2 = .041$. For Sample 2, there were no significant differences across age groups, $F(4, 277) = .856$, $p = .491$, $\eta^2 = .012$.

Reliability

Cronbach's alpha coefficients were calculated to assess the internal consistency of the C-SI-20 in both samples. The scale demonstrated acceptable internal consistency, with $\alpha = .79$ in Sample 1 and $\alpha = .78$ in Sample 2. Test – retest reliability over a two-week interval was strong, with an ICC of .89, $p < .001$. The average duration between the two survey administrations was 15.71 days ($SD = 3.63$). These findings indicate that the C-SI-20 has good reliability across both internal consistency and temporal stability.

Convergent, criterion-related, and discriminant validity

The convergent validity of the C-SI-20 was supported through strong positive correlations with theoretically related constructs. Specifically, the C-SI-20 was significantly correlated

with overall authenticity ($r = .72$, $p < .001$) and the authentic living subscale ($r = .61$, $p < .001$), indicating that higher levels of psychological functioning as measured by the SI are associated with greater authenticity and congruent living. In contrast, negative correlations were observed with the self-alienation ($r = -.57$, $p < .001$) and accepting external influence ($r = -.55$, $p < .001$) subscales, providing further evidence of convergent validity.

Criterion-related validity was also demonstrated. As predicted, SI scores were positively associated with conscientiousness ($r = .45$, $p < .001$), extraversion ($r = .27$, $p < .001$), agreeableness ($r = .22$, $p < .001$), and intellect/imagination ($r = .22$, $p < .001$), while showing a significant negative correlation with neuroticism ($r = -.58$, $p < .001$), consistent with expectations derived from the concept of the fully functioning person.

Finally, discriminant validity was supported by a non-significant correlation between SI scores and socially desirable responding ($r = .09$, $p = .08$), suggesting that responses on the SI were not unduly influenced by social desirability bias. The correlations between all relevant scales and subscales used to assess convergent, criterion-related, and discriminant validity can be found in Table 2.

Exploratory factor analysis

For the EFA conducted with Sample 1, the KMO measure of sampling adequacy was .82, and Bartlett's test of sphericity was significant, χ^2 (190) = 1759.81, $p < .001$, indicating that the data were appropriate for factor analysis. The results were consistent with those reported by Freire (2007) and Zech et al. (2018). The scree plot revealed a substantial drop in eigenvalues after the second factor and a clear break between the second and third components, suggesting that a two-factor solution was suitable (see Figure 1). The detailed results of the EFA are presented in Table 3.

The two-factor solution accounted for 34.67% of the total variance. The rotated factor matrix revealed a clear separation of items into two distinct groups: a positively worded group (Factor 1) and a negatively worded group (Factor 2). Factor 1, comprising 12 items, accounted for 22.12% of the total variance, while Factor 2, consisting of 8 items, accounted for 12.55% of the total variance. The results of the EFA for the C-SI-20 replicated the factor structure identified in the English and French versions. Pearson's correlation between the two extracted factors was $r = .23$, $p < .001$. All items loaded on their intended factors with acceptable loadings (≥.30), except for Item 11 (I have listened sensitively to myself), which demonstrated cross-loading on both factors.

Confirmatory factor analysis and exploratory structural equation modeling

Following the decision tree proposed by Alamer (2022), a series of measurement models were estimated, including CFA, ESEM, bifactor CFA, and bifactor ESEM models. Among these, only the bifactor ESEM model demonstrated an adequate fit to the data: χ^2 (133) = 261.52, $p < .001$, CFI = .925, TLI = .893, RMSEA = .059 [90% CI: .048, .069], and SRMR = .044. The CT-CM model did not fit the data well, χ^2 (162) = 653.377, $p < .001$, CFI = .715, TLI = .666, RMSEA = .104 [90% CI: .096, .113], SRMR = .084, indicating that wording effects are not the source of the observed psychometric multidimensionality in the C-SI-20. Comparing the model fit between the two best-fitting models – the CFA bifactor model

Table 2. Correlations between scale scores.

	M	SD	C-SI-20	AS	AS-AL	AS-SA	AS-AEI	IPIP-EX	IPIP-AG	IPIP-CN	IPIP-NE	IPIP-II	SRDS
C-SI-20	2.400	.455	–										
AS	4.717	.992	.720***	–									
AS-AL	5.256	1.009	.611***	.655***	–								
AS-SA	3.185	1.378	−.570***	−.841***	−.337***	–							
AS-AEI	3.214	1.404	−.546***	−.843***	−.354***	.570***	–						
IPIP-EX	3.891	1.378	.265***	.156**	.149**	−.169**	−.071	–					
IPIP-AG	2.561	.904	.219***	.162**	.093	−.226***	−.066	.264***	–				
IPIP-CN	3.593	.740	.451***	.393***	.305***	−.346***	−.288***	.138**	.230***	–			
IPIP-NE	3.411	.771	−.582***	−.345***	−.281***	.280***	.293***	−.223***	−.069	−.397***	–		
IPIP-II	3.250	.865	.219***	.274***	.178***	−.299***	−.166**	.177***	.234***	.168**	−.095	–	
SRDS	.143	.205	.093	.083	.156**	−.108*	.020	−.033	.176***	.194***	−.071	.184***	–

Notes. *M* = Mean; SD = Standard Deviation; C-SI-20 = Simplified Chinese Strathclyde Inventory − 20-item version; AS = Authenticity Scale; AS-AL = Authentic Living subscale of the Authenticity Scale; AS-SA = Self-Alienation subscale of the Authenticity Scale; AS-AEI = Accepting External Influence subscale of the Authenticity Scale; IPIP-EX = Extraversion subscale of the Mini-IPIP; IPIP-AG = Agreeableness subscale of the Mini-IPIP; IPIP-CN = Conscientiousness subscale of the Mini-IPIP; IPIP-NE = Neuroticism subscale of the Mini-IPIP; IPIP-II = Intellect/Imagination subscale of the Mini-IPIP; SRDS = Socially Desirable Response Set Five-Item Survey. ***$p < .001$; **$p < .01$; *$p < .05$

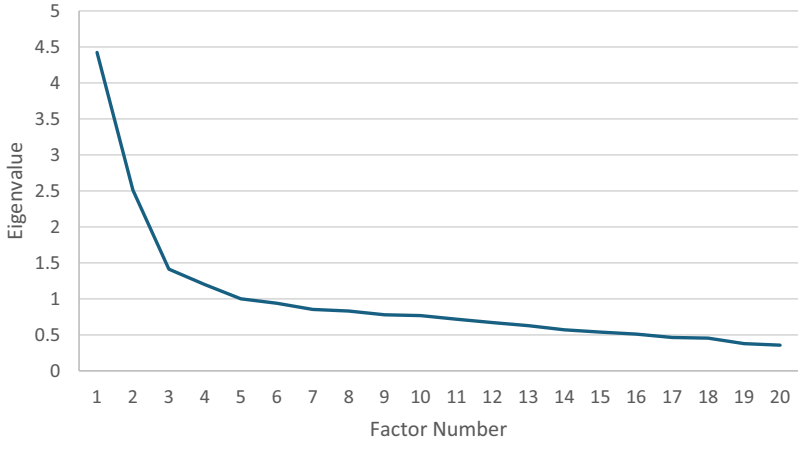

Figure 1. Scree plot of the eigenvalues in the EFA.

Table 3. Exploratory factor analysis of the C-SI-20 items in Sample 1.

	Statements		Factor	
Item	Simplified Chinese	English	F1	F2
SI20	我感觉做我自己就很好。	I have felt it is all right to be the kind of person I am.	**.680**	.268
SI19	我接纳自己的感觉。	I have accepted my feelings.	**.615**	.240
SI10	我根据我自己内心对于正确的感觉做决定。	I have made choices based on my own internal sense of what is right.	**.587**	−.091
SI16	我感觉我对自己是真实的。	I have felt true to myself.	**.581**	.211
SI13	我完全活在当下每个崭新的瞬间。	I have lived fully in each new moment.	**.571**	.084
SI17	我能够解决自己内心的冲突。	I have been able to resolve conflicts within myself.	**.539**	.268
SI08	我以自己独特的方式表达自己。	I have expressed myself in my own unique way.	**.499**	−.092
SI04	我信赖我对种种情形的反应。	I have trusted my own reactions to situations.	**.479**	.089
SI14	我对我的感觉有觉察。	I have been aware of my feelings.	**.468**	−.144
SI01	我能够自由随心。	I have been able to be spontaneous.	**.430**	.285
SI05	我经历了令我非常满意的 (与家人, 朋友, 恋人或其他重要的人的)亲密关系。	I have experienced very satisfying personal relationships.	**.358**	.230
SI11	我敏感地聆听自己。	I have listened sensitively to myself.	**.319**	**−.383**
SI06	我害怕自己的情绪反应。	I have felt afraid of my emotional reactions.	.144	**.540**
SI15	我将一部分的自己藏在'面具'之后。	I have hidden some elements of myself behind a 'mask.'	.024	**.526**
SI12	我感觉自己做了超出自己控制范围的事情。	I have felt myself doing things that were out of my control.	−.015	**.507**
SI09	我发现自己在与他人交往时心怀戒备。	I have found myself 'on guard' when relating with others.	.068	**.472**
SI07	我向他人寻求认可或不认可。	I have looked to others for approval or disapproval.	.077	**.447**
SI18	我感觉自己做的事情与我的性格不符。	I have felt myself doing things that are out of character for me.	.065	**.440**
SI03	我试图成为别人认为我应该成为的样子。	I have tried to be what others think I should be.	.104	**.327**
SI02	我为了自己的态度或行为而自责。	I have condemned myself for my attitudes or behavior.	.078	**.304**

Note: C-SI = the Chinese version of the Strathclyde Inventory; Loadings larger than .30 are shown in boldface.

Table 4. Goodness of fit indices for competing models of the C-SI-20.

Model	χ^2(df)	CFI	TLI	RMSEA [90% CI]	SRMR
CFA Unidimensional	993.387 (170)*	.522	.466	.132 [.124 .140]	.109
CFA Two-factor	634.599 (169)*	.730	.696	.100 [.091 .108]	.087
CT-CM	653.377 (162)*	.715	.666	.104 [.096 .113]	.084
CFA Bifactor	318.003 (150)*	.902	.876	.063 [.054 .073]	.056
ESEM Two-factor	372.832 (151)*	.871	.838	.073 [.063 .082]	.055
ESEM Bifactor	261.522 (133)*	.925	.893	.059 [.048 .069]	.044

Notes. χ^2 = chi-square; df = degrees of freedom; CFA = Confirmatory factor analysis; ESEM = Exploratory structural equation modeling; CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = root mean square error of approximation; CI = confidence interval; SRMR = standardized root mean square residual; CT-CM = Correlated Traits – Correlated Methods; *$p < .001$.

and the ESEM bifactor model – revealed that the ESEM bifactor model provided a significantly better fit. The differences in fit indices exceeded conventional thresholds for meaningful improvement, with ΔCFI = .023 and ΔTLI = .017 (i.e. increases greater than .01), indicating that the added flexibility of the ESEM bifactor structure significantly enhanced the model's ability to capture the underlying data structure (Chen, 2007; Cheung & Rensvold, 2002). The fit statistics for all estimated models are presented in Table 4.

Discussion

The present study translated the SI into Chinese and examined its psychometric properties across two adult Chinese samples. The C-SI-20 demonstrated good reliability with strong internal consistency and temporal stability. Construct validity was supported through significant positive and negative correlations with theoretically relevant constructs, and a non-significant association with social desirability.

EFA replicated the two-factor structure found in the original English version of the SI (Freire, 2007) and the French translation (Zech et al., 2018), suggesting that experiential fluidity and experiential constriction are distinct yet related dimensions. For the first time, CFA and ESEM models were applied to the SI. Among all estimated models, only the bifactor ESEM model demonstrated adequate fit. Compared to simpler models, such as the unidimensional and correlated two-factor CFA models, the bifactor ESEM structure better captured the complexity of the data, showing that items loaded on both a general factor and specific group factors. In this model, a general factor – congruent functioning (S. Stephen, 2023) – accounted for the common variance shared across all items, representing the overarching construct the SI was designed to measure. At the same time, two specific group factors – experiential fluidity and experiential constriction – captured additional, unique variance associated with thematically clustered item subsets, reflecting more nuanced dimensions within the overall construct. The superior fit of the bifactor ESEM model suggests that while the SI primarily assesses a unifying latent construct related to congruent functioning, it also reflects meaningful subdomains that cannot be fully explained by a single factor alone. This structural configuration supports the interpretation of SI scores both at the total scale level (via the general factor) and, when needed, at the subscale level (via the specific factors). The bifactor ESEM solution thus provides a more psychometrically robust and theoretically coherent

representation of the scale's dimensionality, integrating both the unity and diversity of psychological adjustment and functioning as captured by the SI. In practical terms, this model allows for interpretation of both overall congruent functioning through the general factor and more nuanced experiential tendencies through the specific factors. This adds value for researchers and practitioners by offering a deeper understanding of both the quality and style of psychological adjustment, making the SI a more robust and clinically informative tool.

As the factor structure of the SI has never been confirmed in any language version – including the original English version – this study provides the first evidence using both CFA and ESEM approaches. By identifying the bifactor ESEM model as the best-fitting structure, the study offers important insights into the underlying construct validity of the SI and establishes a methodological foundation for future cross-cultural validation efforts. Another noteworthy finding was that the CT-CM model did not fit the data, addressing a long-standing concern regarding the nature of the SI's two-factor structure (Freire, 2007; Stephen, 2020; Stephen & Elliott, 2022). Specifically, the poor fit of the CT-CM model suggests that the two-factor solution observed in the SI is not merely a methodological artifact of item wording (i.e. positively vs. negatively worded items), but instead reflects substantive multidimensionality within the construct.

Although experiential fluidity and experiential constriction might initially appear to represent opposite ends of the same continuum, the findings support the interpretation that they are better understood as distinct yet related dimensions of congruent functioning. Experiential fluidity and experiential constriction are not simply inverses of one another. For example, low levels of fluidity do not necessarily imply high levels of constriction, and individuals may display characteristics of both, depending on context. The model accounts for the reality that people's responses to questions may be shaped by both a general trait (e.g. how congruent or psychologically adjusted they are overall) and more specific tendencies (e.g. how open or avoidant they are toward experiencing). By allowing for this flexible pattern of relationships between items and underlying traits, the model provides a more accurate and realistic representation of how the scale functions.

While the fully functioning person, as described in person-centered theory, may embody maximum experiential fluidity and the absence of experiential constriction, most individuals are in a continuous process of growth rather than at an ideal endpoint. In real-life contexts, experiential fluidity and constriction often coexist, fluctuate, or manifest differently depending on situational, relational, or developmental factors. Treating these as separate factors allows for a more nuanced and realistic understanding of psychological functioning. It acknowledges that individuals may be highly fluid in some areas of their experience while simultaneously constrained in others, and that therapeutic progress may involve working with both dimensions – facilitating fluidity while gently addressing sources of constriction. This perspective aligns with a process-oriented view of human development and supports more flexible, individualized approaches to psychological assessment and intervention.

These findings support the continued use of the total SI score to represent overall psychological functioning, consistent with Rogers' concept of the fully functioning person. However, evidence of multidimensionality suggests that specific subdimensions also contribute meaningful variance. We recommend conceptualizing the C-SI-20

primarily as a global measure of the fully functioning person in the Chinese context, while remaining attentive to its underlying structure when used in future research and applied settings.

Limitations

This study has several limitations that should be acknowledged. Participants were recruited via social media platforms, which may have introduced sampling bias. The resulting samples were predominantly young (18–34 years) and female, potentially limiting the representativeness of the findings. In addition, the samples were mainly drawn from the general adult population in China (Sample 1 = 89.1%; Sample 2 = 98.9%). Therefore, the findings may not be generalizable to other groups, such as Chinese adolescents, older Chinese people, Chinese-speaking people living outside China or clinical populations. This recruitment method may have also attracted individuals with a greater interest in psychological topics, particularly due to the wording of the recruitment message, which mentioned participation in a study involving psychological measures. As a result, the findings should be interpreted with caution, and future studies should aim to recruit from a wider range of platforms and demographic groups to enhance representativeness and generalizability.

In the current sample, the Socially Desirable Response Set Five-Item Survey demonstrated a Cronbach's alpha of .55, indicating relatively low internal consistency. This figure is somewhat lower than what has been reported in previous research, where the scale exhibited acceptable reliability levels. The discrepancy may be attributed to sample-specific characteristics or contextual differences in administration. It is also worth noting that alpha values can be artificially deflated in brief scales, particularly those with only a few items (Cortina, 1993). Future research may benefit from using longer versions of the scale or supplementing it with additional indicators of response bias to enhance reliability.

Significant differences in SI scores were found between the 45–54 age group and the younger age groups (18–24 and 25–34) in Sample 1, Round 1, but these differences did not replicate in Sample 1, Round 2 or in Sample 2. Notably, the sample sizes across age groups were unbalanced, with the majority of participants falling within the 18–34 age range. This reflects the demographic profile of the social media platforms used for recruitment – Douban and Sina Weibo – whose primary user base consists of younger adults. Individuals aged 45 and above represent a small minority on these platforms and are unlikely to be representative of the broader older adult population in China. Therefore, caution is warranted when interpreting age-related findings. Additionally, information about participants' education levels was not collected, which limits the ability to account for potential effects of educational background on responses to the SI. Future research should aim to recruit a more demographically and educationally diverse sample, using alternative channels better suited to reaching older and more varied populations. Future research is needed to examine the psychometric properties of the C-SI-20 across different cultural context (e.g. countries of residence) and clinical contexts to ensure broader applicability.

Implications

Despite these limitations, the present study employed a rigorous exploratory-to-confirmatory strategy to examine the factor structure of the SI in the Chinese context. The results provide strong evidence that the C-SI-20 is a psychometrically sound instrument for assessing optimal psychological functioning as conceptualized by Rogers' theory of the fully functioning person. This work offers a critical foundation for further empirical research by enabling investigations into whether the core dimensions of the fully functioning person are expressed similarly across cultures. It also opens the door to exploring how cultural values may influence optimal psychological development and well-being. In doing so, the study contributes to a more nuanced understanding of person-centered theory in specific cultural contexts and supports the ongoing inquiry into the distinction between universal and culture-specific aspects of psychological functioning.

In addition, future studies should examine the measurement invariance of the C-SI-20 across different demographic groups (e.g. gender, age, education level) and cultural contexts to determine whether the scale assesses the same construct equivalently. It is also important to evaluate measurement invariance between the Chinese version and the original English version, as well as other translated versions, to ensure that the construct of the fully functioning person is being measured consistently across languages and cultures. Establishing measurement invariance is essential for making meaningful comparisons across populations and for validating the scale's cross-cultural applicability. Finally, it would be interesting to develop this research program by adopting a qualitative approach to exploring the phenomenological experience of Chinese respondents when interacting with SI items, leading to a deeper understanding of the meaning and value that they attribute (or not) to these aspects of their experience.

Conclusion

This study translated and validated the simplified Chinese version of the Strathclyde Inventory (C-SI-20), offering the comprehensive evaluation of its psychometric properties in a Chinese adult population. The C-SI-20 demonstrated good reliability and validity, with results supporting both a general factor and two specific dimensions – experiential fluidity and experiential constriction. These findings offer a robust foundation for applying the C-SI-20 in future research and practice in Chinese-speaking contexts. This work contributes to the foundation for a more culturally informed understanding of person-centered personality theory.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Data availability statement

The data that support the findings of this study are available on request.

Ethics approval

Ethical approval was obtained from the Department of Psychological Sciences & Health at the University of Strathclyde (Reference number:75.15 June 2023). The study was performed in compliance with GDPR, and the Code of Research Conduct and Research Ethics at the University of Strathclyde.

Informed consent

Informed consent was obtained from all individual participants included in the study.

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