

# The General Flow Proneness Scale: Aspects of Reliability and Validity of a New 13-Item Scale Assessing Flow

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## Abstract

In this article, we report the development and validation of a new measure for flow proneness. The General Flow Proneness Scale is a quantitative measure which is simple to administer, and is context independent. Test-retest reliability was tested on 23 adults, 1 week apart. Intraclass correlation coefficient (ICCs) between the test and retest scores was .956. The General Flow Proneness Scale was further tested on 228 participants between 18 and 76 years of age (mean age = 34.66,  $SD = 14.75$ ), which allowed for the exploration of applicability, internal consistency, and construct validity. The overall results indicate that the scale is applicable for the age studied (18–76). All individual item scores showed a positive correlation with the total score, and ranged between .20 and .67. The Cronbach's alpha value was .78 for the standardized items. Pearson's correlation coefficient between the total score of the General Flow Proneness Scale and the total score of the Swedish Flow Proneness Questionnaire including all domains was  $r = .573$  ( $p < .001$ ); for the student group  $r = .645$  ( $p < .001$ ); for the professionally active group  $r = .475$  ( $p < .001$ ). These promising results warrant further development of the General Flow Proneness scale, including normalization based on a larger, representative sample.

## Keywords

assessment, flow, learning, achievement, reliability, validity

## Introduction

According to the reward-learning framework of autonomous knowledge acquisition, the learning process generates feelings of reward that strengthens further information-seeking behavior (Murayama et al., 2019). This framework integrates neuroscientific and psychological theories on the broad concepts of curiosity and interest, and points out the importance of intrinsic reward. In a similar manner, the theory of flow introduced by Csikszentmihalyi in 1975, focuses on enjoyment as a result of an intense focus of attention during a task or activity. Csikszentmihalyi (1975, p. 36) explains that flow is what we have been calling the autotelic experience that is, “Dynamic state – the holistic sensation people feel when they act with total involvement – as flow.”

Ericsson et al. (2007) suggested that *deliberate practice*, or training beyond a person's current level of competence and comfort, is needed to develop expertise. Practice and training with proper intensity, challenge, and specificity, is important to become knowledgeable and skillful in a particular area (Edelman, 1987, 1992; Ericsson & Charness, 1994; Gottlieb, 1998; Kleim & Jones, 2008;

Sigmundsson et al. 2017, 2022a; Thelen & Smith, 1994). According to Bonneville-Roussy and Bouffard (2015), deliberate practice requires goal-orientation, effort, determination, and concentration. Generally, concentration of mental activity, or narrowing of attention on a specific task while ignoring distractions, is one of the most crucial aspects of a successful learning process and performance (Murphy, 2012). However, the role of intrinsic motivation, such as engaging in activities for their own sake and enjoyment, has shown its significant effects on practice quality and resilience (Passarotto et al., 2022; Ryan & Deci, 2000; Stoeber & Eismann, 2007).

The state of flow is different from deliberate practice because it represents the effortless process of intense

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involvement and full absorption in a task (Csikszentmihalyi, 1975). This “optimal experience” is positively related to learning (Furlong et al., 2009), intrinsic motivation (Jackson et al., 1998), well-being (Asakawa, 2004; Rijavec et al., 2016), life satisfaction (Asakawa, 2010), and is negatively related to procrastination (Lee, 2005), anxiety (Asakawa, 2010), and burn-out (Rijavec et al., 2016).

### *The Flow State*

During flow, the attention of the performer is entirely focused on the activity that is, “being in zone” (Kennedy et al., 2014). As a result, one experiences total concentration on the task, while ignoring distractions. This includes the experience of low self-awareness, action-awareness merging, and a change in time perception may occur. Csikszentmihalyi et al. (2005, p. 230) argue that: “Flow is a subjective state that people report when they are completely involved in something to the point of forgetting time, fatigue, and everything else but the activity itself.” Furthermore, the state includes the experience of clear goals and control over the task, by knowing exactly what to do (Csikszentmihalyi, 1975). However, with absolute control over the task in which personal skills outweigh the perceived challenges, relaxation and boredom is predicted (Jackson, Eklund, & Martin, 2010). In contrast, when challenges are perceived as greater than skills, one may experience anxiety or frustration during the activity. Consequently, the dynamic balance between skills and challenges is considered most fundamental and crucial for the flow state (Nakamura & Csikszentmihalyi, 2014). When the perceived challenges match the beliefs of having enough skills to meet these challenges, the experience of flow may begin.

Some people may experience flow once a day for a long time, for several hours in a continuous state pattern (Peifer & Engeser, 2021). However, it is important to mention that flow can be difficult to maintain over time, such as several hours, and may occur periodically (Csikszentmihalyi, 1975). The various components of flow may result in a different individual experience of the holistic state. For example, less frequent experience of challenge-skill balance or control during the state may result in an interruptive flow state, such as several times during the day for shorter periods, that is, minutes. This interruptive nature of the state can be seen as an opportunity for frequent experiences of reward, referred to as autotelic experiences, that may motivate to further engagement with the activity (Greek: auto—self, telos—goal, purpose, Csikszentmihalyi, 1975). Unfortunately, little is known about how each component of flow contributes to the state’s frequency and intensity (Peifer & Engeser, 2021).

Activities such as daydreaming, listening to music, and watching television can reflect the experience of the flow state. These are referred to as “micro flow” activities. In contrast, “macro flow” or “deep flow” activities represent more complex and challenging tasks, which require higher skill levels to perform (Csikszentmihalyi, 1975). Hence, flow is a state that can be experienced in a wide range of activities, including simple tasks as well as complex activities with more intensive use of intellectual or/and physical skills (Csikszentmihalyi, 1975). It has been proposed that flow occurs more frequently and with a higher intensity during high skill and high challenge activities (Asakawa, 2004; Nakamura & Csikszentmihalyi, 2014). However, some studies suggest that flow is more frequently experienced when the challenge is low or moderate (Bakker et al., 2011; Moneta, 2004; Tse et al., 2018). Research also indicates that flow is not restricted to specific jobs or activities, nor to culture, socioeconomic status, or one’s age (Asakawa, 2004).

### *Autotelic Personality*

According to Csikszentmihalyi (1975), people with an *autotelic personality* experience the flow state more frequently and more intensely than others. “Autotelics” have a general tendency to engage in activities rewarding in and of themselves, with a focus on the process during the activity rather than an external goal. They are more prone to flow by having the ability of effortless concentration combined with the ability of transforming boring or stressful situations into opportunities of engagement. Consequently, they adapt by either being sensitive to opportunities for challenge or enjoying diligent skill building when the challenge is high (Csikszentmihalyi, 1975; Csikszentmihalyi et al., 1993). General curiosity, interest in life, persistence, and low-self-centeredness are described as important characteristics of the autotelic personality (Nakamura & Csikszentmihalyi, 2002). By integrating literature and studies concerning flow, Tse et al. (2018) identified curiosity and interest in life, persistence, low self-centeredness, intrinsic motivation, enjoyment and transformation of boredom as well as challenges, in addition to attentional control, as important attributes for flow and autotelic personality.

People characterized by high flow proneness perceive high challenge as less stressful and more enjoyable, compared to people with low flow proneness (Asakawa, 2004). Hence, flow proneness can elevate the flow state when the challenge is high (Tse et al., 2018, p. 287). Due to the possibility of modifying the perception of personal skills and challenges, flow can be an accessible state across various activities, and be dependent on personal

characteristics (Asakawa, 2004; Jackson, Eklund, & Martin, 2010).

### *Measurement of Flow*

The Flow Questionnaire developed by Csikszentmihalyi and Larson (1984) is one of the few existing measures assessing individual differences in flow propensity through semi-structured interviews. The FQ is known to assess the main characteristics of flow, but may lack content validity (Johnson et al., 2014). The experience sampling method is also known to be quite demanding in both time and resources. Jackson et al. developed some of the most widely used, quantitative measurements of flow, assessing flow within specified activities with regard to all flow characteristics (Jackson & Eklund, 2002; Jackson, Eklund, & Martin, 2010; Jackson & Marsh, 1996). Furthermore, the Swedish Flow Proneness Questionnaire (SFPQ) measures flow proneness in professional life, maintenance, and leisure time, and can be considered more general, despite being operationalized in relation to specific areas or activities (Ullén et al., 2012). The abovementioned measurements can also serve as indicators of the autotelic personality but focus on the frequency or intensity of experienced flow characteristics in a specified context rather than traits (Baumann, 2012). Consequently, Tse et al. (2018, 2020) developed the Autotelic Personality Questionnaire (APQ) to measure the essential features of the concept. The APQ is an important contribution to the further understanding of the autotelic personality. As mentioned by the authors however, the advancement of knowledge on the autotelic personality awaits, given the early stage of literature development regarding this topic, and despite the extensive studies on the flow state (Tse et al., 2020).

### *The Current Study*

Considering the combination of the above-mentioned theories while focusing on the theory of flow and the autotelic personality, we point out the importance of deep concentration ability and attentional control, perception and adjustment of challenge, in addition to the experience of reward or enjoyment. In the current study, we aim to investigate whether flow proneness in daily life can be limited to these characteristics, and test whether flow proneness can be considered a general, context independent trait. Consequently, the research group for Learning and Skill Development has developed a scale for the measurement of flow proneness in the daily life, without the need for activity specification. The scale tries to capture the flow proneness across situations, therefore the name “general flow proneness scale.” It may be argued that the current scale is domain general and may

therefore be more related to autotelic personality than the other dispositional scales. The scale is a self-report questionnaire with 13 items focusing on preference for challenge, ability of balancing skills and challenges, frequent flow experiences, and development of interests. The participants are asked to choose an alternative that describes them best, and the items are rated on a Likert scale, ranging from 1 to 5 (1 = Strongly disagree, 5 = Strongly agree).

In this article, we report the development of the scale aimed at the objective quantification of flow proneness. The principal aim is to examine the applicability of the 13-item scale, its internal consistency and construct validity, as well as test-retest reliability in a sample of participants between the ages of 18 and 76 years. The overall goal is to contribute to the understanding of the complex construct of flow and the autotelic personality.

### **Method**

Two hundred twenty-eight subjects participated in the study. The participants indicated their age, gender, and educational level. Additionally, all participants were asked whether they were full-time students; if not, they were asked whether they were professionally active.

All of the participants answered the General Flow Proneness scale questions, in addition to the Swedish Flow Proneness Questionnaire (for the construct validity part of the study). Recruitment was conducted among young adults and adults in Norway. They were randomly selected from: a university students' population (tested at university campus in a normal school hours); sports clubs and group of visitors to a public building. The sample can be described as a convenience sample.

### *Demographics*

The average age in the group was 34.66 ( $SD = 14.75$ ). The average age of the female group was 35.01 ( $SD = 14.73$ ,  $N = 158$ ) and the male group 34.02 ( $SD = 14.93$ ;  $N = 69$ ). 54% of the participants were full-time students. One hundred thirty-three of the participants indicated that their level of education was a bachelor's degree or higher, and five of the participants did not wish to answer.

### *Procedure*

The study was performed in accordance with the Declaration of Helsinki. Because the study did not collect sensitive personal data, passive consent from the participants was confirmed to be sufficient from the Norwegian Centre for research data (NSD). The

**Table 1.** The Thirteen Flow Scale Questions.

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1. I enjoy challenging tasks/activities that require a lot of focus.
  2. When I am focused on a task/activity, I quickly tend to forget my surroundings (other people, time, and place).
  3. I usually experience a good flow when I do something (things are neither too easy nor too difficult for me).
  4. I have several different areas of interest.
  5. It is difficult for me to walk away from or quit a project I am currently working on.
  6. I become stressed in the face of difficult/challenging tasks.
  7. It is difficult for me to maintain concentration over time.
  8. I quickly become tired of things I do.
  9. I am usually satisfied with the results of my efforts across various tasks (I experience feelings of mastery).
  10. When I focus on something, I often forget to take a break.
  11. I get bored easily.
  12. My daily tasks are exhausting rather than stimulating.
  13. I develop an interest for most of the things I do in life.
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information registered about the participants was anonymous (only age and gender).

The General Flow Proneness Scale was developed by the research group for Learning and Skill Development. First, we developed relevant questions for the scale, with regard to the previously mentioned theories. Accordingly, the first version of the scale was tested in a pilot study and an internal consistency check, which resulted in a shortening of 15 to 13 items. The second version was tested twice on 23 participants (mean age = 22.52 years,  $SD = 1.31$ ), 1 week apart, to assess test-retest reliability. Assessment of the participants took place in a quiet room at the university campus. All testing was performed in a group setting (during the normal school hours). A trained experimenter explained the procedure and was present when the questionnaires were conducted. The second part of the data collection was carried out by trained research assistants, and conducted through <http://nettskjema.no>.

### Measurements

**General Flow Proneness.** The General Flow Proneness Scale was used to assess the participants' level of flow proneness in the daily life. The participants were presented 13 items and asked to choose an alternative that describes them best, using the 5-point Likert scale (Likert, 1932), ranging from 1 (totally disagree) to 5 (totally agree). The maximum score on this scale is 5 (high flow proneness) and the lowest is 1 (low flow proneness), with regard to the reversed items, including item 6, 7, 8, 11, and 12. The Likert scale was used in order to make comparison to other factors related to flow proneness possible. For an overview of the 13-items translated to English, see Table 1. Reliability and validity aspects will be presented in the results section.

**Flow Proneness.** The Swedish Flow Proneness Questionnaire (SFPQ) developed by Ullén et al. (2012), is a self-report measure of how frequently the participant has flow experiences in three different situations, typical in industrialized societies, that is, work, maintenance, and leisure time. The SFPQ is a reliable and validated scale, which is frequently used in research on the flow state and the autotelic personality (Niksirat et al., 2019). The scale consists of seven items for each domain, with five response alternatives ordered on a Likert scale: 1, "Never"; 2, "Rarely"; 3, "Sometimes"; 4, "Often"; 5, "Everyday, or almost everyday." The items were made to capture the main dimensions of a flow experience, including concentration, balance between skills and challenge of a task, explicit goals, clear feedback, sense of control, lack of boredom, and enjoyment (Ullén et al., 2012). In the current study, the Swedish Flow Proneness Questionnaire was translated from English to Norwegian (Bokmål) by two bilingual translators through the "translation-back-translation" technique. Further, it was adapted for measuring flow proneness during studying for participants who were students, as in a previous study (Tse et al., 2018). The participants who were professionally active answered the original version of the scale. The mean score for flow proneness in study-related activities (FP—Studying), professional life (FP—Work), maintenance (FP—Maintenance), and leisure time (FP—Leisure) were calculated from the seven items from their respective domains, in order to measure flow in different areas of life. The total score of the SFPQ including all dimensions served as a flow proneness score. Additionally, the total score was calculated separately for students and professionally active participants, as the mean of three dimensions. Construct validity, reliability, and internal consistency have been shown to be adequate for the SFPQ at .96 (comparative fit index), .87 (split-half coefficient), and .83 (Cronbach's  $\alpha$ ), respectively (Ullén et al., 2012).

### Data Reduction and Analysis

The data were analyzed in SPSS (version 27). The test-retest reliability was estimated by using intraclass correlation coefficients (ICC) (2.1) (Shrout & Fleiss, 1979), between test and retest scores for total scores and individual item scores. Internal consistency of the included items was estimated by the use of Cronbach's alpha values. In addition, an analysis of correlation (Pearson's  $r$ ) between the items and the total score were calculated. When an individual item score was correlated with the total score, the individual question score was excluded from the total score to avoid statistical dependence. To obtain an estimate of the construct validity, we used the SFPQ scores, and correlated the total test score of the

**Table 2.** Means and Standard Deviations of Test and Retest Scores ( $N = 23$ ).

	Test score		Retest score		ICC
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Question 1	3.71	1.0	3.70	0.82	.841
Question 2	3.73	1.28	3.48	1.03	.631
Question 3	3.04	1.06	3.56	0.73	.726
Question 4	4.48	0.73	4.39	0.89	.629
Question 5	3.30	1.02	3.39	1.07	.705
Question 6	2.69	1.01	2.69	0.87	.617
Question 7	2.52	1.34	2.48	1.27	.873
Question 8	2.78	0.95	2.91	0.90	.836
Question 9	3.35	0.98	3.65	0.83	.825
Question 10	2.91	1.3	3.04	1.3	.858
Question 11	2.62	0.93	2.66	0.87	.765
Question 12	3.34	0.88	3.26	0.91	.615
Question 13	3.39	1.03	3.60	0.94	.614
Total score	3.28	0.59	3.29	0.55	.956

Note. ICCs = intraclass correlation coefficients.

General Flow Proneness Scale with the total score for the SFPQ, including its respective domains. Construct validity can be established by comparing a new measure with a prior measure known to be valid, which is referred to as a “gold standard.” For general flow proneness, no such gold standard is available.

## Results

### Demographic Differences

First, we explored the demographic differences among the variables of interest. Age had a significant correlation with the mean score of the General Flow Proneness Scale,  $r = .356$  ( $p < .001$ ) (Pearson’s correlation) that is, the older the participants were, the more prone to flow. The Independent Sample’s *T*-test indicated that there was no significant difference between the two gender groups: females had a total flow score of 3.44 ( $SD = 0.59$ ) and males of 3.50 ( $SD = 0.59$ ).

### Test-Retest Reliability

The means and standard deviations of test and retest scores for the first sample are presented in Table 2. ICCs between test and retest scores ranged from .61 to .87. ICCs between test and retest total scores was .96 ( $N = 23$ , mean age 22.52,  $SD = 1.31$ ).

### Applicability

The means and standard deviations for the 13 questions in the General Flow Proneness Scale for the second sample are shown in Table 3.

**Table 3.** Mean and Standard Deviations for the General Flow Proneness Scale Questions ( $N = 227$ ).

	Mean	<i>SD</i>
Question 1	3.77	1.01
Question 2	3.65	1.13
Question 3	3.59	1.02
Question 4	4.36	0.84
Question 5	3.25	1.23
Question 6	2.86	1.24
Question 7	2.78	1.15
Question 8	3.24	1.15
Question 9	3.75	1.02
Question 10	3.76	1.22
Question 11	2.95	1.34
Question 12	3.21	1.12
Question 13	3.70	1.01

### Internal Consistency

All individual items correlated positively with the total score, with correlations ranging from .20 to .57. Correlations between scores of the individual items ranged between low and high (.01–.60). The results are presented in Table 4. Furthermore, the General Flow Proneness Scale showed good internal consistency with Cronbach’s alpha value of .78.

### Construct Validity

Pearson’s correlation coefficient between the total score of the General Flow Proneness Scale and the total score of the SPFQ including all four domains was  $r = .573$  ( $p < .001$ ,  $N = 213$ ); total SPFQ score for the student group  $r = .645$  ( $p < .001$ ,  $N = 118$ ); for the professionally active group  $r = .475$  ( $p < .001$ ,  $N = 95$ ). The General Flow Proneness Scale correlation coefficients regarding the individual domains of the SPFQ included SF—Studying  $r = .703$  ( $p < .001$ ,  $N = 122$ ); SF—Working  $r = .519$  ( $p < .001$ ,  $N = 97$ ); SF—Maintenance  $r = .384$  ( $p < .001$ ,  $N = 224$ ). SF—Leisure  $r = .325$  ( $p < .001$ ,  $N = 228$ ).

## Discussion

The purpose of the current study was to examine the psychometric properties of a recently developed measure attempting to quantify flow proneness independent from activity specification, the General Flow Proneness Scale. The goal was to test whether flow proneness could be limited to specific characteristics of the autotelic personality, including deep concentration ability or attentional control, perception and adjustment of challenge, in addition to development of interests and enjoyment. In the

**Table 4.** Pearson Correlation Coefficients and 95% Confidence Intervals for Individual Questions Score and Total Test Score and Pearson Coefficients for Individual Test Items.

	Correlation with total score*	95% CI
Question 1	.46**	[0.36, 0.56]
Question 2	.27**	[0.14, 0.38]
Question 3	.56**	[0.46, 0.64]
Question 4	.20**	[0.08, 0.33]
Question 5	.30**	[0.17, 0.41]
Question 6	.33**	[0.21, 0.44]
Question 7	.57**	[0.48, 0.66]
Question 8	.56**	[0.46, 0.64]
Question 9	.42**	[0.31, 0.52]
Question 10	.40**	[0.28, 0.50]
Question 11	.40**	[0.28, 0.50]
Question 12	.43**	[0.32, 0.53]
Question 13	.37**	[0.26, 0.48]

Note. CI = Confidence interval.

\*On the basis of the other 12 item scores. \*\*Correlation is significant at the .01 level (2-tailed).

first round of testing, we explored test-retest reliability with the first sample including 23 participants, with acceptable results. Further, the scale was administered to the second sample with 228 participants, allowing to explore the applicability, internal consistency, and construct validity of the scale. The results are promising and warrant further development of the General Flow Proneness Scale.

### Reliability and Applicability

In the repeated administration of the scale including the same participants, we obtained ICC coefficients for individual subtests ranging from .61 to .87, and .96 for the total score. These results indicate a relatively low degree of variation in test-retest within the subtests and the total scores. However, it is important to point out that the test-retest procedure was performed on a small sample ( $N = 23$ ), consisting only of adult participants who were students, making these specific results actual only for students and for this certain age group. However, the results including the second sample ( $N = 228$ ) indicate that the scale is applicable for the studied age-range (18–76). The Cronbach's alpha value of .78 showed that the scale has at least acceptable internal consistency, supporting its reliability (Bland & Altman, 1986).

The scale was designed with 13 items measuring deep concentration ability, perception and adjustment of challenge, enjoyment of concentration and challenge, in addition to interest development. The items reflect what we consider to be the most relevant aspects of the theory of flow and the autotelic personality, with regard to the earlier presented theory of deliberate practice and reward-

learning framework, and the earlier identified attributes of the autotelic personality (Tse et al., 2018). Combined, these items reflect an overall estimate of flow proneness, presented by the total score. The individual sub-items to total score coefficients ranged from .20 to .57. Furthermore, the sub-item coefficients ranged from  $-.04$  to .60. Based on these results, acceptable test homogeneity suggests that all items appear to be measuring aspects of the same construct (see Tables 4 and 5). It is important to mention that despite good homogeneity of the test scores, items 2, 4, and 5 resulted in only five significant correlations to other items, and showed the weakest correlations to the total score.

### Construct Validity

In the current study, we compared the General Flow Proneness scale to the Swedish Flow Proneness Questionnaire to assess construct validity. As previously mentioned, the SFPQ has been shown to be a reliable and validated scale, which is frequently used in research on the flow state and the autotelic personality (e.g., De Manzano et al., 2013; Niksirat et al., 2019). However, when investigating construct validity, the appropriateness of a test or scale serving as a “gold standard” should always be questioned. The SFPQ includes important dimensions of a flow experience, but excludes action-awareness merging, loss of self-consciousness, and time-transformation, which may reflect deep mental involvement or concentration (Csikszentmihalyi, 1975) that we consider important for the measurement of general flow proneness. In addition, the included item regarding sense of complete control can be put into question, because challenges disappear with absolute control over a task (Jackson, Eklund, & Martin, 2010).

In the current study, we found a correlation coefficient between the two total scores of .573 ( $p < .001$ ), indicating that on average, the scales are moderately related. We argue that our scale, by combining autotelic personality and dispositional flow, represents a novel way of measuring flow proneness or trait of flow. The overall pattern of the results suggests that the total scores of the two scales have a shared variance of 33%, which indicates moderate construct validity (Cronbach & Meehl, 1955). These results may reflect the importance of other, additional personal traits that are needed for frequent flow experiences in the context of maintenance and leisure time activities. The combination of context with personal characteristics may also be of greater importance.

### Limitations and Future Research

The biggest limitation of the current study is the correlation design, and small sample sizes. In future research, to

**Table 5.** Pearson's Coefficients for Individual Test Items.

	1	2	3	4	5	6	7	8	9	10	11	12	13
Question 1	1	.25**	.27**	.19**	.24**	.23**	.32**	.28**	.24**	.24**	.20**	.22**	.19**
Question 2		1	.15*	.14*	.27**	-.01	.02	.11	.15	.38	.11	.02	.16*
Question 3			1	.19**	.22**	.25**	.48**	.33**	.42**	.21**	.22**	.39**	.37**
Question 4				1	.15*	.10	.06	.03	.13	.04	-.01	.11	.34**
Question 5					1	-.04	.18**	.21**	.12	.34**	.09	.06	.11
Question 6						1	.46**	.32**	.14*	.02	.25**	.30**	.09
Question 7							1	.60**	.32**	.29**	.36**	.35**	.18**
Question 8								1	.22**	.28**	.51**	.35**	.19**
Question 9									1	.22**	.17**	.32**	.25**
Question 10										1	.19**	.07	.19**
Question 11											1	.26**	.14*
Question 12												1	.31**
Question 13													1

Note. CI = Confidence interval. \* Correlation is significant at the .05 level (2-tailed). \*\* Correlation is significant at the .01 level (2-tailed).

which the data are being collected, both reliability and validity of the scale will be explored by the use of other, more relevant statistical methods for scale development, including exploratory and confirmatory factor analysis. In addition, structural equation modeling will allow establishing the relationship of flow proneness to other relevant concepts. Further studies will also include a more representative sample with regard to age groups, in order to investigate the development of flow proneness across the life span. The scale should also be investigated across different cultures in future studies.

As pointed out by Tse et al. (2020), the early-stage flow proneness in a general context, also referred to as autotelic personality, has received little attention despite extensive studies on the flow state. More studies are needed to develop these concepts and increase our understanding of their relationship to concentration, intrinsic motivation, and the role of emotions in learning.

## Conclusion

The presented scale was applied to a wide age-range (18–76 years). Based on the acceptable reliability and internal consistency of the scale, the 13-item scale can be useful to give an overall picture of flow proneness. Due to the moderate correlation ( $r = .573$ ) coefficients found between the total scores from the developed General Flow Proneness scale and the SFPQ, it can be argued that they capture some similar aspects of the flow construct, supporting the construct validity of the scale for this particular group. Although more evidence is required to support the validity of this scale, the current study suggests that it is a promising tool for measuring dispositions for flow proneness. It is important to note

that the scale should not be considered a static interpretation of flow proneness, but rather as a tool that may help understand the complexity of the concept of flow and autotelic personality. Flow, through its' positive relationships to learning (Furlong et al., 2009), intrinsic motivation (Jackson, Kimiecik, & Marsh, 2010), well-being (Asakawa, 2004; Rijavec et al., 2016), and life satisfaction (Asakawa, 2010), may be one of many explanations to why some individuals offer much time, effort, and hard work toward a specific activity. Research indicates that individuals who have performed outstandingly in some areas clearly have vast experience and practice in that area (Ericsson et al., 2007; Sala & Gobet, 2017). Literature analysis of Darwin (1881) and Andersen (2004), in addition to interviews with 23 “experts” from different fields such as sport, arts, and sciences, indicate that these individuals do have strong motivational factors including great flow experiences, passion, grit and growth mindset (Sigmundsson & Haga, 2020; Sigmundsson et al., 2020, 2022b). Consequently, the current research can be considered important within the literature on the topic of flow, and the field of positive psychology in general, and may be used in future studies for the exploration of the autotelic personality.

## Declaration of Conflicting Interests

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