

Bringing the Psychology of Situations into Flow Research: Personality and Situation Characteristics as Predictors of Flow

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Abstract

The aim of the present study was to extend the existing findings on environmental flow precursors by adopting the DIAMONDS taxonomy of psychologically meaningful situation characteristics as a comprehensive theoretical framework. It was hypothesized that an individual's perception of the flow-related situation, particularly the dimensions of duty, intellect and positivity, would represent a more powerful predictor of the intensity of flow as compared to his or her basic personality traits. The first sample consisted of 169 employees who had to focus on the most engaging work-related event they had experienced in the past three months. They rated the characteristics of that situation and estimated the intensity of their flow experience. The second sample consisted of 96 students who participated in a challenging group activity. After the activity, they filled-in the same questionnaires as the first sample. Participants from both samples also rated their basic personality traits. Despite differences in the settings and flow-related situations evaluated, the obtained findings were similar for the two samples studied. While the association between flow and personality was weak, the situation characteristics were more strongly related to flow. Although the two samples differed with respect to the mean levels of the flow-related situation characteristics, regression analyses yielded similar results, suggesting that the intensity of flow at work and in studying is most prominently determined by situation characteristics related to intellect and positivity. Stable personality characteristics, on the other hand, had low predictive power in explaining the intensity of flow.

Keywords: state flow, situation characteristics, DIAMONDS taxonomy, Big Five personality traits, employees, students

Introduction

Previous studies have shown that different environmental and personality factors facilitate flow as a highly complex and positive sensation that people experience when they perform activities with total involvement (Csikszentmihályi,

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1975/2000). Challenge-skill balance, autonomy, clear rules, and feedback on the progress being made are conducive to flow experience. These characteristics are often attributed to the flow-related situation or activity although it is clear that they are highly dependent on individual's subjective perception and interpretation of the situation. In the investigation of the psychological aspects and individual's perception of flow-related situations, taxonomical approach to situations offered by personality psychology should be of interest (Rauthmann et al., 2014). With this approach, psychological characteristics of different situations can be compared, thus allowing for an identification of a profile of the subjectively experienced situation characteristics that is most frequently associated with flow.

The flow model (Csíkszentmihályi, 1975/2000, 1990) emphasizes an interaction of a person with her environment. Individual's phenomenological experience of flow is a product of the interaction between his or her temporal and relatively stable personality characteristics and environment at a specific moment. Although this interactional approach is of central importance in flow theory, it is rather difficult to incorporate it in empirical studies (Schmidt, Shernoff, & Csíkszentmihályi, 2014). Earliest studies used open-ended interviews in which participants described their subjective experiences and various situation characteristics related to flow (Csíkszentmihályi, 1975/2000). Later studies used questionnaires to measure individual differences in the experiential profile and frequency of flow-related experiences. Most frequently, a real-time sampling procedure called Experience Sampling Method (ESM; Hektner, Schmidt, & Csíkszentmihályi, 2007) was implemented which successfully addresses the problem of recall and potential estimation errors. Partly, ESEM also addresses the characteristics of the situation as it enables researchers to get insight into the type of activity an individual is performing, location, possible companions, etc. In addition, in ESM participants are asked about their subjective perception of challenges and skills in the ongoing situation, which allows researchers to group participants based on their experiential profile (Massimini, Csikszentmihalyi, & Carli, 1987). Nevertheless, situation characteristics and their perception as precursors of flow were seldom investigated comprehensively and as a central research problem in previous studies.

As regards relatively stable personality characteristics related to flow, autotelic personality is a construct of interest. Autotelic individuals have higher tendency to engage in activities for their own sake. They are better able to recognize challenges adequate to their skills and possess "meta-skills" such as curiosity, persistence, and low self-centeredness (Csíkszentmihályi, 1990; Nakamura & Csíkszentmihályi, 2009). As such, autotelic individuals possess a constellation of psychological characteristics that make them more prone to experience flow. It seems plausible that the propensity towards flow should represent an important trait-like predictor of flow in specific situations.

Besides autotelic personality, in recent years researchers have also shown interest in uncovering the role that specific personality traits may have in promoting flow. In most of these studies, the Big Five personality traits taxonomy, that comprehensively embraces relatively stable personality characteristics, was adopted as a theoretical framework. Findings on the relationship between personality traits and flow differ with respect to the operationalization of flow adopted. Studies focusing on flow intensity have most consistently found a negative association with neuroticism and a positive association with conscientiousness and sometimes extraversion (Johnson, Keiser, Skarin, & Ross, 2014; Mesurado & Richaud de Minzi, 2014; Ross & Keiser, 2014; Ullén et al., 2012). Conversely, in a study that investigated a relationship between personality traits and the occurrence of flow, the only personality trait predictive of flow onset was openness to experience (Bassi, Steca, Monzani, Greco, & Delle Fave, 2014). Authors suggested that openness to new challenges as a receptive quality (Csikszentmihályi, Rathunde, & Whalen, 1993) might play a crucial role in identifying opportunities for flow. On the other hand, low neuroticism and high conscientiousness represent active qualities that are more important in sustaining the duration and intensity of flow.

Besides individual's personality, characteristics of the environment represent an important predictor of flow. In fact, previous studies that examined precursors of flow were more commonly oriented to situations, not to personality traits. For example, when an individual is watching a television he or she will most likely experience something near boredom. Situations are structured in such a way that proximal goals and feedback are more or less salient and challenge is more easily or more difficulty manipulated to match an individual's skills. However, flow refers to a subjective phenomenology, suggesting that individual's perception of the situation, and not the situation per se, is relevant precursor or flow experience. Although on average individuals may be bored while watching TV or doing household chores, some individuals may feel challenged and experience flow in seemingly very boring situations (Csikszentmihályi, 1990).

Thus, reporting about the type of situation (e.g., watching TV, playing tennis, studying) provides researcher with a limited information about the situation. On the other hand, individual's perception of a specific situation can offer a more nuanced understanding of the influence that the situation may have on the individual's subjective experience at a specific moment. For example, a perception of challenge in a specific situation, balanced with a perception of skills adequate to meet the challenge, has been shown as a prominent predictor of flow (e.g., Eisenberger, Jones, Stinglhamber, Shanock, & Randall, 2005; Engeser & Rheinberg, 2008; Schiefele & Raabe, 2011). Recently, personality psychologists have introduced a taxonomy of dimensions of situation characteristics (see ten Berge & de Raad, 1999 and Yang, Read, & Miller, 2009 for a review) which can provide an additional unencumbered perspective on the situation characteristics related to flow, as it encompasses several

psychologically meaningful characteristics of situations and not only those pertinent to flow according to previous research.

Stemming from Funder's long-term examination of the psychology of situations (e.g., Funder, 2007, 2009), Rauthmann et al. (2014) proposed taxonomy of psychologically meaningful dimensions of situation characteristics. Based on the Situational Q-Sort (RSQ; Sherman, Nave, & Funder, 2010; Wagerman & Funder, 2009), a measure that comprehensively samples situation characteristics, they developed the "Situational Eight DIAMONDS": Duty, Intellect, Adversity, Mating, pOsitivity, Negativity, Deception, and Sociality. DIAMONDS can be used to characterize enduring life spaces or momentary situations, to compare various situations to one another, to classify situations according to how they are perceived, and to study individual differences in situation perception (Rauthmann et al., 2014) – the possibilities that could also benefit the research on flow. Previous research has already established that challenge-skill balance represents one of the main situational conditions leading to the experience of flow. However, these findings can be complemented through the broader and more comprehensive perspective of situation characteristics taxonomy.

In the present study, flow as a situation-specific state was examined among employees and students. Among the situational eight DIAMONDS, duty, intellect, and positivity seem to correspond most closely to the experience of flow at work and study. Duty refers to the extent that individuals perceive a situation to contain work, fulfilling duties, solving problems, and making decisions. It is closely related to the personality dimension of conscientiousness. Intellect refers to the perception of intellectual engagement, cognitive demands, deep reflection, and display of intellectual abilities in the situation. Among personality dimensions, openness to experience is particularly related to intellect. Finally, positivity describes the extent to which people perceive a situation as pleasant, enjoyable, simple, and clear. It is mostly related to positive valence and extraversion (Rauthmann et al., 2014). These situation characteristics may be seen as conducive to flow experience at work and study, as they channel one's attention to the challenges related to task demands (duty), foster one's intellectual engagement (intellect), and create a sense of clarity and enjoyment (positivity). Nevertheless, flow in other activities, such as sports or leisure, could be related to a different profile of the situation characteristics.

Our goal in the present study was to examine comprehensively the antecedents of flow as a state in work (Sample 1) and academic settings (Sample 2), concurrently focusing on personality and situation characteristics typologies. More specifically, we investigated the extent to which flow as a state could be predicted by enduring personality dispositions and situation's perception of participants. According to previous theorizing, it was hypothesized that psychological characteristics of situation would have a more powerful role in explaining the variance in flow as a state as compared to the Big Five personality traits. In previous studies, where a significant association has been established between flow and basic personality traits,

flow has usually been operationalized at a dispositional level, thus representing a relatively stable individual's characteristic. Conversely, in the present study, flow was measured as a temporary state that can vary in its intensity. Hence, the perception of the situation should represent the most conspicuous predictor of flow as a state. Due to the differences in the two settings studied (work vs. study) as well as in the flow-related situation evaluated, it was expected that the two samples would differ with respect to their ratings of the situation characteristics proposed within the DIAMONDS taxonomy. However, in both samples, duty, intellect, and positivity were expected to emerge as significant predictors of flow.

Method

Participants

The study included two convenience samples of participants. The first sample consisted of 169 employees from different organizations, companies, and institutions from Slovenia (65.1% female) with the mean age of 39.1 years ($SD=9.8$ years). Employees were invited to participate via an e-mail with a link to an electronic questionnaire. The second sample consisted of 96 psychology students (81.3% female) with the mean age of 19.3 years ($SD=1.0$ year). They filled-out paper-and-pencil version of the questionnaires during regular tutorials at the university.

Measures

Participants from both samples filled out Slovene versions of the questionnaires on the Big Five personality traits, situation characteristics, and flow as a state.

The Big Five personality traits were assessed using two versions of the *Big Five Inventory* – BFI. While the second sample (students) completed the full version of the BFI, the first sample (employees) completed the short version. The BFI (John, Donahue, & Kentle, 1991) is intended to measure the Big Five personality traits: extraversion, agreeableness, conscientiousness, neuroticism, and openness. The full version of the scale consists of 44 items that are rated on a Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The BFI has good measurement characteristics with adequate factorial validity and Alpha coefficients ranging between .79 and .88 (John & Srivastava, 1999). The Slovene version of the scale also proved to have adequate factor structure and internal consistency with Alphas between .77 and .85 (Avsec & Sočan, 2007). The short version of the BFI, the BFI-K (Rammstedt & John, 2005) is composed of 21 items that are also assessed on a 5-point Likert scale. The BFI-K was originally validated on two student samples (Rammstedt & John, 2005). Results showed satisfactory factorial and construct validity. Alpha reliability coefficients for the two samples ranged between .64/.59

and .86/.81. On a Slovene sample, Alpha coefficients of the BFI-K ranged between .58 and .69. Results of the exploratory structural equation modelling (ESEM) indicated an acceptable fit of the five-factor model (Zager Kocjan, 2016). In the present study, Alpha coefficients for the BFI-K ranged between .53 and .68. For the BFI, Alpha coefficients could not be computed, since only the total scores on the five subscales were collected from the second sample.

The Riverside Situational Q-Sort 8 – RSQ-8 (Rauthmann et al., 2014) measures eight psychologically meaningful situation dimensions according to the Situational Eight DIAMONDS taxonomy: duty, intellect, adversity, mating, positivity, negativity, deception, and sociality. The scale is composed of 32 items that are assessed using a 4-point Likert scale (1 – *strongly disagree*; 4 – *strongly agree*). Authors report clear factor structure of the scale and good internal consistency with Alpha coefficients ranging between .57 and .74 (Rauthmann et al., 2014). The measurement characteristics of the Slovene version of the scale have not been reported yet. After two problematic items were omitted due to very low item-total correlation (items 12 and 28; item 10 was also omitted in the second sample), Alpha coefficients obtained in the present study ranged between .61/.43 and .83/.77 for the first and the second sample, respectively.

The State Flow Scale – SFS has been developed following an example of the Core flow state scale (Martin & Jackson, 2008) that measures the phenomenology of the flow experience. The SFS is composed of 10 items that are rated on a 5-point Likert scale (1 – *never/strongly disagree*, 5 – *always/strongly agree*). The items describe the feeling of flow during a target activity using the most common colloquial expressions and phrases used in Slovene language. Participants are instructed to recall and briefly describe a specific activity and then rate their experience during that activity. Zager Kocjan (2016) reports an acceptable fit of a one-dimensional model to the data and an Alpha coefficient of .92. Alpha coefficients obtained on the first and the second sample of the present study were .91 and .92, respectively.

To ensure the comparability between the mean scores from different scales, the scale scores were computed as an average of the all corresponding items.

Procedure

Participants from both samples completed the three questionnaires in the same sequence. First, they completed the BFI, following by the SFS and the RSQ-8. Before completing the SFS and the RSQ-8, employees were instructed to focus on the most engaging work-related activity they had experienced in the past three months and then fill-in the two questionnaires with that event in mind. Students, on the other hand, filled-in the questionnaires after participating in an hour and a half long group activity with the task of preparing a presentation for their classmates. Each group consisted of seven or eight students. When completing the SFS and the RSQ-8, they

were instructed to respond with reference to the group activity they had participated in.

Results

An overview of the descriptive statistics is presented in Table 1. Means were calculated from each participant's mean of item scores. A closer examination of the scale means reveals no severe ceiling or bottom effects. Of particular interest is the comparison between the RSQ-8 subscale means. In both settings (work and study), intellect, duty, positivity, and sociality were the situation characteristics with the highest mean ratings. Conversely, the lowest were the mean values on mating and adversity. The variability of the situation characteristics ratings was slightly lower in the student sample.

Using an independent-samples *t*-test, the two samples were compared in the mean levels of state flow and situation characteristics. Employees reported significantly higher intensity of flow as compared to students. As regards the situation characteristics, employees reported higher negativity, adversity, and intellect. On the other hand, students experienced higher sociality and positivity.

Table 1. *Descriptive Statistics, t-tests, and Correlations of State Flow with the Big Five and the Situational Eight*

	Work		Study		<i>t</i> -test	<i>r</i> with SFS	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		Work	Study
<i>SFS</i>							
State flow	3.76	0.81	3.09	0.79	-6.63**		
<i>BFI</i>							
Extraversion	3.53	0.66	3.40	0.78		.12	.13
Agreeableness	3.82	0.61	3.75	0.50		.03	.24*
Conscientiousness	4.14	0.53	3.57	0.60		.06	.17
Neuroticism	2.52	0.68	3.07	0.70		.07	-.16
Openness	3.83	0.58	3.79	0.54		.06	.01
<i>RSQ-8</i>							
Duty	3.75	1.05	3.70	0.59	-.45	.26**	.30**
Intellect	3.87	0.86	3.65	0.77	-2.11*	.36**	.57**
Adversity	1.36	0.63	1.22	0.36	-2.22*	-.03	-.26*
Mating	1.19	0.56	1.19	0.44	.10	.11	-.20
Positivity	3.11	1.02	4.03	0.69	8.83**	.31**	.54**
Negativity	2.53	1.11	1.93	0.74	-5.25**	.06	-.20*
Deception	1.63	0.75	1.60	0.61	-.39	.00	-.03
Sociality	3.00	0.91	3.90	0.59	9.66**	.28**	.25*

Note. Since the assumption of equality of variances was violated for 6 of the 9 tests (duty, adversity, positivity, negativity, deception, and sociality), all *t*-test were reported with equal variances not assumed. **p*<.05; ***p*<.01.

Generally, correlations between state flow and the Big Five personality traits were low and non-significant (see Table 1). The only statistically significant correlation was between state flow and agreeableness in the student sample. On the other hand, most of the correlations between state flow and the situation characteristics were higher and statistically significant. In both samples, statistically significant correlations were between state flow and intellect, positivity, duty, and sociality. On the student sample, negative correlations with adversity and negativity were also significant.

Table 2. Hierarchical Regression Analyses of State Flow on the Big Five and the Situational Eight

	Work				Study			
	ΔR^2	B	95% CI for B	β	ΔR^2	B	95% CI for B	β
1 st step	.03				.09			
Extraversion		.14	[-.07;.34]	.11		.07	[-.15;.29]	.07
Agreeableness		.06	[-.17;.30]	.05		.30	[-.04;.64]	.19
Conscientiousness		.05	[-.20;.30]	.03		.18	[-.09;.44]	.14
Neuroticism		.16	[-.05;.36]	.13		-.08	[-.33;.17]	-.07
Openness		.06	[-.17;.29]	.04		.01	[-.30;.32]	.01
2 nd step	.26**				.41**			
Extraversion		.16	[-.03;.35]	.13		.06	[-.12;.23]	.06
Agreeableness		.03	[-.18;.24]	.02		.03	[-.27;.32]	.02
Conscientiousness		.03	[-.21;.27]	.02		.16	[-.05;.38]	.12
Neuroticism		.08	[-.11;.26]	.07		-.06	[-.27;.14]	-.06
Openness		-.06	[-.27;.15]	-.04		.01	[-.24;.26]	.01
Duty		.10	[-.05;.25]	.13		.11	[-.19;.40]	.08
Intellect		.27	[.10;.44]	.29*		.33	[.12;.55]	.33*
Adversity		.10	[-.14;.34]	.08		-.22	[-.60;.16]	-.10
Mating		.06	[-.16;.27]	.04		-.29	[-.59;.02]	-.16
Positivity		.27	[.14;.41]	.34**		.43	[.17;.69]	.38*
Negativity		.05	[-.09;.19]	.07		.01	[-.22;.24]	.01
Deception		-.07	[-.28;.14]	-.07		.04	[-.21;.28]	.03
Sociality		.05	[-.09;.20]	.06		-.07	[-.32;.18]	-.05
R^2 (Adj. R^2)	.28 (.22)				.50 (.41)			

* $p < .05$; ** $p < .01$.

Table 2 presents results of the hierarchical regression analyses of the state flow on the Big Five personality traits and the eight situation characteristics. Similar results were obtained for both samples despite different settings (work vs. study). In both samples, the Big Five did not contribute significantly to the variance explained in state flow. On the other hand, eight situation characteristics explained 26% and 41% of the variance in state flow in work and academic settings, respectively. Altogether, 28% (Adjusted $R^2 = .22$; $F = 6.92$; $p < .000$) of the variance in state flow was

explained in the employee sample and 50% (Adjusted $R^2=.41$; $F=8.23$; $p<.000$) in the student sample. In both settings, statistically significant predictors were intellect and positivity. Hence, employees and students who perceived the situation evaluated as enjoyable and intellectually challenging reported higher intensity of state flow in that situation.

Discussion

Flow results from an interaction between an individual and his or her environment. Previous research on flow antecedents has revealed that besides a constellation of specific personality traits, environmental characteristics may favor or hinder flow onset. The present study aimed at extending the existing findings on environmental flow precursors by adopting a comprehensive framework of the taxonomy of situation characteristics (Rauthmann et al., 2014). It was hypothesized that an individual's perception of the flow-related situation would represent a more powerful predictor of the intensity of flow as compared to his or her basic personality traits. Differences were expected between the employee and student sample with regard to the mean levels of the situation characteristics related to flow. However, in both samples, duty, intellect, and positivity were expected to emerge as significant flow predictors. Our results generally confirmed the expectations, with similar findings for work and academic settings.

In line with the expectations, the two settings differed significantly from one another in the mean levels of some of the situation characteristics. Intellect, adversity, and sociality were rated higher in the evaluation of the situation related to the flow at work as compared to the flow at study. On the other hand, positivity and sociality were situation characteristics rated higher in flow at study. A proper understanding of these findings requires a comparison between the two settings studied as well as between the flow-related situations evaluated. In the employee sample, each participant rated a unique self-selected situation that could be potentially flow-related. This sample mostly comprised highly educated white-collar workers, teachers, and medical staff that perform professional or administrative work containing cognitive demands and requiring intellectual engagement. Employees in these positions may thus prominently retrieve flow in intellectual challenges. In the student sample, intellect was rated significantly lower than in the employee sample, although it was still among the most highly rated situation characteristics. Conversely, higher levels of sociality and positivity were observed in this sample. These differences can be attributed to the flow-related situation evaluated in this sample. All students participated in a group activity with the task/challenge to prepare a 15-minute presentation for their classmates. Therefore, social interaction and communication were primarily required to successfully meet the challenge. The positivity of the situation was encouraged with the opportunity to choose the group freely, so that friends and students who generally prefer working together could

select the same group. The activity was performed at the end of semester and no extrinsic rewards such as grades, that could foster adversity and competition, were assigned to students based on their performance.

Flow is indeed conceptualized as a highly positive and rewarding experience (Csikszentmihályi, 1975/2000, 1990). However, the experiential profile of flow may vary across activities. In productive activities such as work, flow is usually associated with below average levels of positive affect and self-determination, while the perception of goals is above average (Csikszentmihályi & Lefevre, 1989; Delle Fave & Massimini, 2005). These findings can help explain why in the employee sample negativity and adversity were rated higher as in the student sample. At their work, highly skilled employees often have to solve problems, handle threats, and manage conflicts. Although adverse and related to negative feelings such as anxiety and frustration, such demands do not necessarily interfere with flow but may instead represent a challenge to employees that has to be overcome.

The two samples were also compared in the intensity of their flow experience, with the employee sample showing significantly higher mean level on the State flow scale as compared to the student sample. This difference is not surprising given that each employee was allowed to select the situation that he or she experienced as most engaging in a particular period, whereas all students rated the same situation. Although the activity assigned to students was challenging and highly structured and had the potential to promote flow, students could differ with respect to their subjective experience of the situation. Hence, the activity might not be equally engaging for all the students. If allowed to self-select the most engaging situation in a specific period, some students might select a different type of situation or activity, such as individual studying, writing psychological reports, or listening to lectures.

Despite differences in the mean levels of flow intensity and some of the situation characteristics, the associations between the investigated variables were similar in both samples. The four situation characteristics that were rated highest in both samples also demonstrated significant correlations with state flow in the two samples. The highest were the correlations with intellect and positivity, following by duty and sociality. Intellect refers to an individual's perception that a selected situation requires deep cognitive processing (Rauthmann et al., 2014). Our results thus indicate that individuals who perceived higher intellectual demands in the evaluated situation experienced higher state flow. This is in line with previous findings on the importance of high situational challenges perceived by an individual in order to experience flow (e.g., Eisenberger et al., 2005; Engeser & Rheinberg, 2008; Schiefele & Raabe, 2011). Positivity as another statistically significant flow correlate refers to individual's perception of a situation as enjoyable and potentially rewarding (Rauthmann et al., 2014). Numerous studies have confirmed a global positivity and intrinsic reward of flow condition that stems from a balanced relationship between the perception of challenges and personal skills (e.g., Delle Fave & Massimini, 2005; Delle Fave, Massimini, & Bassi, 2011). In both samples,

a significant flow correlate was also the perception of duty. Duty refers to the extent that a situation contains work or tasks that need to be fulfilled (Rauthmann et al., 2014). These challenging objectives can steer individual's attention resources on a specific activity, thus promoting involvement and flow. Finally, sociality also demonstrated a positive association with flow, which is in line with several studies showing a significant relationship between flow and group activities (e.g., Walker, 2010). Compared to individual activities, social activities require more skills and promote cooperation and interdependency among group members (Delle Fave et al., 2011).

In the student sample, flow was also negatively associated with adversity and negativity, yet to a lower degree. The corresponding correlations in the employee sample were weak and non-significant. The negative associations observed in the student sample seem to be due not only to the positive nature characterizing flow experience, but to the generally positive experience of group activity that was assigned to the students. Nevertheless, as stated previously, flow in productive activities such as work is often characterized by below average levels of positive affect (Csikszentmihalyi & Lefevre, 1989; Delle Fave & Massimini, 2005), suggesting that flow can also occur in situations that might be frustrating and difficult. Since employees were allowed to choose the flow-related activity freely, it seems plausible that they referred to a wide range of different situations that could differ largely with respect to their emotional features and complexity.

Besides situation characteristics, individual's personality traits represent possible antecedents of flow. Previous research focusing on dispositional flow measures (e.g., Johnson et al., 2014; Ullén et al., 2012) indicated that flow could be predicted primarily by active personality qualities, such as low neuroticism and high conscientiousness that promote the intensity and duration of flow experience (Csikszentmihályi et al., 1993). However, in the present study flow was measured as a state that may vary not only between individuals but also between situations. Therefore, it was expected that weak associations would be observed between flow as a state and individual's personality traits. Our finding indeed revealed weak and non-significant correlations between flow and the Big Five. One exception was low, yet statistically significant positive correlation with agreeableness in the student sample that can be attributed to the interpersonal nature of the flow-related activity in which students participated. Agreeableness seems to represent a personal resource that may promote quality cooperation and communication in social settings.

None of the Big Five personality traits, however, significantly predicted flow as a state. On the other hand, situation characteristics explained a significant share of the variance in flow in both samples. These findings confirm our expectations that subjectively rated situation characteristics should represent a more prominent precursor of the intensity of flow as a state as compared to the relatively stable personality traits. The latter have instead been found to predict the individual's general propensity towards flow (e.g., Johnson et al., 2014; Ullén et al., 2012), but to

a lesser extent also the onset of flow (measured as all-or-nothing phenomenon; Bassi et al., 2014). It could be expected that personality affects the intensity of flow experience indirectly through a more proximal and thus more powerful influence of the perceived situation characteristics. This is also confirmed by previous research showing a significant association between the Big Five personality traits and the psychological characteristics of situations that people encounter (Rauthmann, Sherman, Nave, & Funder, 2015).

Despite different settings and flow-related situations evaluated, in both samples, situation characteristics predicting flow were the same. As expected, intellect and positivity significantly predicted flow intensity among employees and students. Yet, contrary to expectations, duty did not contribute significantly to the variance explained. Therefore, from the perspective of the Situational Eight DIAMONDS taxonomy, the key psychologically relevant situation characteristics that contribute to the intensity of flow in work and academic settings refer to the perception of a situation as enjoyable and clear-cut (positivity) and as containing cognitive demands and intellectual challenges (intellect). Similarly as intellect, duty also covers challenging aspects of the activity, but more in terms of various, not only intellectual, extrinsic demands (Rauthmann et al., 2014). Intellect, on the other hand, represents an opportunity for intellectual engagement and reflective processing – the aspects that could per se promote self-complexity and provide intrinsic reward.

Although the results of the regression analyses performed on the two samples were similar in terms of the statistically significant predictors of flow, they differed with respect to the share of the variance in flow explained. Specifically, a larger share of the variance was explained in the student sample as compared to the employee sample. Also, the observed correlations were lower in the employee sample. Since the employees were allowed to self-select the flow-related situation, a wide range of different situations could be chosen, varying broadly in terms of the related activities and tasks. Thus, it could be speculated that more specific situation characteristics such as the features of the flow-related task (e.g., rules and structure) could represent a relevant source of the variation in flow in this group of participants.

Our study has some drawbacks worth considering. The first limitation refers to the RSQ-8, the instrument measuring the psychological characteristics of the situation. The Slovene translation of some of the items from this instrument proved to be inadequate. These items were omitted from the calculation of the subscale scores, which could reduce the content validity of these subscales. In addition, the representativeness of our findings is restricted by the constraints of the two samples used. The employee sample mostly consisted of highly educated individuals primarily occupying professions such as medical doctors, teachers, and engineers. The generalizability of the findings is also limited to work and academic settings. It seems plausible to expect that flow in other settings and activities, such as sports or leisure, could be related to a different profile of the situation characteristics, with intellect possibly having less conspicuous role.

Comparing the situation characteristics that accompany flow in different activities and life domains could represent an interesting avenue for future research. Moreover, adopting a different approach to measuring flow may offer different perspective on the relationship between flow and situation characteristics. One such approach often used in research examines flow as an all-or-nothing phenomenon – an experience that a person either has or does not have (*Flow Questionnaire*; Delle Fave & Massimini, 1991). Finally, although we argued for a model in which situation characteristics predicted flow, the reversed association, in which the experience of flow would shape the evaluation of the situation, also seems possible. Therefore, future studies would benefit from a more process-oriented examination of the relationship between flow and the subjective perception of the situation.

Despite the limitations of the study, the obtained findings were generally in line with the expectations and highly consistent between two very different samples and approaches to examining flow. Taken together, they indicate that the intensity of flow experience in work and academic settings is most prominently related to the situation characteristics of intellect and positivity. Stable personality characteristics, on the other hand, have low predictive power in explaining flow as a state. Our findings further suggest that the situational eight DIAMONDS taxonomy could be meaningfully applied to the research on flow and could contribute to uncovering the profile of the subjectively experienced situation characteristics most frequently associated with flow in different life domains. A particular advantage of adopting the DIAMONDS taxonomy in flow research concerns its comprehensive perspective on various situation characteristics unencumbered with previous theorizing on potential precursors of flow. As such, it provides a novel and promising outlook on the investigation of flow antecedents.

References

- Avsec, A., & Sočan, G. (2007). Vprašalnik petih velikih faktorjev BFI [Big five inventory BFI]. In A. Avsec (Ed.), *Psihodiagnostika osebnosti* (pp. 171-178). Ljubljana: Department of Psychology, University of Ljubljana.
- Bassi, M., Steca, P., Monzani, D., Greco, A., & Delle Fave, A. (2014). Personality and optimal experience in adolescence: Implications for well-being and development. *Journal of Happiness Studies*, 15, 829-843.
- Csikszentmihályi, M., & LeFevre, J. (1989). Optimal experience in work and leisure. *Journal of Personality and Social Psychology*, 56, 815-822.
- Csikszentmihályi, M. (1975/2000). *Beyond boredom and anxiety*. San Francisco: Jossey-Bass.
- Csikszentmihályi, M. (1990). *Flow: The psychology of optimal experience*. New York, NY: Harper and Row.

- Csikszentmihályi, M., Rathunde, K., & Whalen, S. (1993). *Talented teenagers: The roots of success and failure*. New York: Cambridge University Press.
- Delle Fave, A., & Massimini, F. (1991). Modernization and the quality of daily experience in a southern Italy village. In N. Bleichrodt & P.J.D. Drenth (Eds.), *Contemporary issues in cross-cultural psychology* (pp. 110-119). Amsterdam: Swets & Zeitlinger Publishers.
- Delle Fave, A., & Massimini, F. (2005). The investigation of optimal experience and apathy: Developmental and psychosocial implications. *European Psychologist, 10*, 264-274.
- Delle Fave, A., Massimini, F., & Bassi, M. (2011). *Psychological selection and optimal experience across cultures*. Dordrecht, NL: Springer.
- Eisenberger, R., Jones, J.R., Stinglhamber, F., Shanock, L., & Randall, A.T. (2005). Optimal flow experiences at work: For high need achievers alone? *Journal of Organizational Behavior, 26*, 755-775.
- Engeser, S., & Rheinberg, F. (2008). Flow, moderators of challenge-skill-balance and performance. *Motivation and Emotion, 32*, 158-172.
- Funder, D.C. (2007). Beyond just-so stories towards a psychology of situations: Evolutionary accounts of individual differences require independent assessment of personality and situational variables. *European Journal of Personality, 21*, 599-601.
- Funder, D.C. (2009). Persons, behaviors and situations: An agenda for personality psychology in the postwar era. *Journal of Research in Personality, 43*, 120-126.
- Hektner, J.M., Schmidt, J., & Csikszentmihályi, M. (2007). *Experience sampling method: Measuring the quality of everyday life*. Thousand Oaks, CA: Sage.
- John, O.P., Donahue, E.M., & Kentle, R.L. (1991). *The Big Five inventory - versions 4a and 54*. Berkeley, CA: University of California, Berkeley, Institute of Personality and Social Research.
- John, O.P., & Srivastava, S. (1999). The Big-Five trait taxonomy: History, measurement, and theoretical perspectives. In L.A. Pervin & O.P. John (Eds.), *Handbook of personality: Theory and research* (Vol. 2, pp. 102-138). New York: Guilford Press.
- Johnson, J.A., Keiser, H.N., Skarin, E.M., & Ross, S.R. (2014). The Dispositional flow scale-2 as a measure of autotelic personality: An examination of criterion-related validity. *Journal of Personality Assessment, 96*, 465-470.
- Martin, A., & Jackson, S. (2008). Brief approaches to assessing task absorption and enhanced subjective experience: Examining 'short' and 'core' flow in diverse performance domains. *Motivation and Emotion, 32*, 141-157.
- Massimini, F., Csikszentmihályi, M., & Carli, M. (1987). Optimal experience: A tool for psychiatric rehabilitation. *Journal of Nervous and Mental Disease, 175*, 545-549.
- Mesurado, B., & Richaud de Minzi, M.C. (2014). Child's personality and perception on parental relationship as correlates of optimal experience. *Journal of Happiness Studies, 14*, 199-214.

- Nakamura, J., & Csikszentmihályi, M. (2009). Flow theory and research. In S.J. Lopez & C.R. Snyder (Eds.), *Oxford handbook of positive psychology* (2nd ed., pp. 195-206). New York: Oxford University Press.
- Rammstedt, B., & John, O.P. (2005). Kurzversion des Big Five Inventory (BFI-K): Entwicklung und Validierung eines ökonomischen Inventars zur Erfassung der fünf Faktoren der Persönlichkeit. *Diagnostica*, *51*, 195-206.
- Rauthmann, J.F., Gallardo-Pujol, D., Guillaume, E.M., Todd, E., Nave, C.S., Sherman, R.A., Ziegler, M., Jones, A.B., & Funder, D.C. (2014). The situational eight DIAMONDS: A taxonomy of major dimensions of situation characteristics. *Journal of Personality and Social Psychology*, *107*, 677-718.
- Rauthmann, J.F., Sherman, R.A., Nave, C.S., & Funder, D.C. (2015). Personality-driven situation experience, contact, and construal: How people's personality traits predict characteristics of their situations in daily life. *Journal of Research in Personality*, *55*, 98-111.
- Ross, S.R., & Keiser, H.N. (2014). Autotelic personality through a five-factor lens: Individual differences in flow-propensity. *Personality and Individual Differences*, *59*, 3-8.
- Schiefele, U., & Raabe, A. (2011). Skills-demands compatibility as a determinant of flow experience in an inductive reasoning task. *Psychological Reports*, *109*, 428-444.
- Schmidt, J.A., Shernoff, D.J., & Csikszentmihalyi, M. (2014). Individual and situational factors related to the experience of flow in adolescence. In M. Csikszentmihalyi (Ed.), *Applications of flow in human development and education* (pp. 379-405). Netherlands: Springer.
- Sherman, R.A., Nave, C.N., & Funder, D.C. (2010). Situational similarity and personality predict behavioral consistency. *Journal of Personality and Social Psychology*, *99*, 330-343.
- ten Berge, M.A., & de Raad, B. (1999). Taxonomies of situations from a trait psychological perspective: A review. *European Journal of Personality*, *13*, 337-360.
- Ullén, F., de Manzano, Ö., Almeida, R., Magnusson, P.K., Pedersen, N.L., Nakamura, J., Csikszentmihályi, M., & Madison, G. (2012). Proneness for psychological flow in everyday life: Associations with personality and intelligence. *Personality and Individual Differences*, *52*, 167-172.
- Wagerman, S.A., & Funder, D.C. (2009). Situations. In P.J. Corr & G. Matthews (Eds.), *Cambridge handbook of personality psychology* (pp. 27-42). Cambridge: Cambridge University Press.
- Walker, C.J. (2010). Experiencing flow: Is doing it together better than doing it alone? *Journal of Positive Psychology*, *5*, 3-11.
- Yang, Y., Read, S.J., & Miller, L. (2009). The concept of situations. *Social and Personality Psychology Compass*, *3*, 1018-1037.
- Zager Kocjan, G. (2016). *Engagement, passion, and flow among employees: A theoretical and empirical distinction*. Doctoral dissertation. Ljubljana: Faculty of Arts.

Colocando situacionismo en las investigaciones de flujo: Características situacionales y de la personalidad como predictores de flujo

Resumen

El objetivo de este estudio fue extender los hallazgos existentes sobre precursores del flujo medioambiental adoptando la taxonomía DIAMANTES de características situacionales psicológicamente significativas como marco teórico exhaustivo. Se hizo la hipótesis que la percepción que un individuo tiene sobre la situación relacionada con el flujo, especialmente las dimensiones de obligación, intelecto y positividad, representaría un predictor más poderoso de la intensidad de flujo en comparación con los rasgos básicos de su personalidad. La primera muestra constó de 169 empleados que tenían que enfocarse en el evento más atractivo que han experimentado en relación con el trabajo en los últimos tres meses. Valoraron las características de esta situación y estimaron la intensidad de su experiencia de flujo. La segunda muestra constó de 96 estudiantes que participaron en una actividad desafiante de grupo.

Después de la actividad completaron unos cuestionarios, igual que la primera muestra. Participantes de las dos muestras valoraron también los rasgos básicos de su personalidad. A pesar de las diferencias en el contexto y en las situaciones evaluadas relacionadas con el flujo, los hallazgos obtenidos eran similares para las dos muestras estudiadas.

Mientras que la relación entre el flujo y la personalidad era débil, las características de la situación se relacionaban más fuerte con el flujo. Aunque las dos muestras se diferenciaban respecto a los niveles medios de las características situacionales relacionadas con el flujo, análisis regresivo produjo resultados similares, sugiriendo que la intensidad de flujo en el trabajo y en los estudios está determinada en la mayor medida por las características situacionales relacionadas con el intelecto y la positividad. Por otro lado, características estables de la personalidad, tuvieron una fuerza predictiva baja para explicar la intensidad de flujo.

Palabras claves: flujo de estado, características situacionales, taxonomía DIAMANTES, Los cinco grandes rasgos de la personalidad, empleados, estudiantes

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