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Flow Experience and Autotelic Personality in Japanese College Students: How Do They Experience Challenges in Daily Life?

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Key words

flow theory, flow experience, autotelic personality, quality of experience, challenges, Japanese college students, psychological well-being.

Abstract

Using the Experience Sampling Method (ESM) and a sample of Japanese college students, the present study conducted two major examinations. First, the present study examined whether flow theory's most basic and general hypothesis, that quality of experience is a function of perceived challenges and skills, was applicable to the Japanese sample. Second, the present study identified autotelic and non-autotelic groups of Japanese college students and explored the nature of autotelic personality, focusing on how perceptions of challenges and skills affected the quality of these two groups' experiences, and how these two groups balanced their perceived challenges and skills when engaged in daily activities. The results showed that high challenge/high skill situations created an optimal state of mind for the Japanese college students, as flow theory postulates. Moreover, a Japanese index of psychological well-being referred to as Jujitsu-kan was reported as being high during periods of flow. The exploratory examination of the autotelic personality showed that the autotelic students' levels of perceived challenges and skills were more balanced than those of their non-autotelic counterparts. Moreover, the autotelic students showed a tendency to position themselves in situations where their perceived challenges were higher than their

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perceived skills, whereas the reverse was true for the non-autotelic students. Implications of these findings were discussed in terms of the universality of flow experience and autotelic personality, and their potentials to increase psychological well-being for the Japanese, as well as people across cultures.

Introduction

Every one of us may hope to make life enjoyable and worth living. Unfortunately, the social and behavioral sciences, including psychology, which could possibly provide some direction for realizing this simple hope, have for decades placed their investigational emphases on pathological aspects of human behaviors. Psychology specifically has increased its attention to the prevention of impairment and pathology, yet has neglected the positive potentials of human existence, especially since World War II (Seligman, 1998; Seligman & Csikszentmihalyi, 2000). Recently, however, we have begun to witness a new movement in the discipline, called "positive psychology" (Rich, 2003), which aims to "begin to catalyze a change in the focus of psychology from preoccupation only with repairing the worst things in life to also building positive qualities" (Seligman and Csikszentmihalyi, 2000, p. 5). Having this new focus, more and more psychologists have been conducting research on positive features of human existence, such as "hope, wisdom, creativity, future mindedness, courage, spirituality, responsibility, and perseverance (p. 5)". Relevant to such research interests, optimal experience or "flow" is one of the most rigorously investigated phenomena in the field of positive psychology.

Originally, the term "flow" was used by Csikszentmihalyi (1975/2000, 1990) to refer to an optimal state of mind in which an individual feels cognitively efficient, deeply involved, and highly motivated and also experiences a high level of enjoyment. Investigations on flow were pursued throughout the 1980s and 1990s mostly in the U.S. and Italy (e.g., Csikszentmihalyi & Csikszentmihalyi, 1988; Inghilleri, 1999; Massimini & Carli, 1988; Massimini & Delle Fave, 2000), and they have developed a robust and empirically well-confirmed theory of flow. According to the theory, two criteria must be satisfied in order for an individual to experience flow (Csikszentmihalyi, 1988, 1990, 1997): (1) perceived challenges posed by an activity must be in balance with perceived abilities or skills to tackle the

challenges and (2) such perceived challenges and perceived abilities or skills must be relatively high (Massimini & Carli, 1988; Massimini, Csikszentmihalyi, & Carli, 1987). In other words, the quality of subjective experience is a function of the perceived challenges and skills (Massimini, Csikszentmihalyi, & Carli, 1987; Moneta & Csikszentmihalyi, 1996). Indeed, Moneta and Csikszentmihalyi (1996) showed evidence that quality of experience had positive associations with the perceived levels of challenges and skills, whereas it had negative associations with the imbalance of challenges and skills. Such evidence was uncovered using hierarchical linear modeling on a 1-week sample of experience that was collected using the Experience Sampling Method (ESM), which allows repeated measurement of an individual's everyday activities, thoughts, and accompanying psychological states in natural settings (Csikszentmihalyi & Larson, 1987; Csikszentmihalyi, Larson, & Prescott, 1977; Larson & Csikszentmihalyi, 1983). Therefore, experiencing flow by positioning ourselves in a matched high challenge-high skill situation appears to be a way to realize our simple, yet life long, hope for enjoyable and worth-while life.

Considering the potential for improvement of quality of life, an important direction in flow research is the investigation of the consequences of the flow experience. In line with this direction, numerous studies have reported on the growth-enhancing feature of flow. For example, several studies have shown that experiencing flow was positively associated with commitment and achievement during the high school years (Carli, Delle Fave, & Massimini, 1988; Csikszentmihalyi, Rathunde, & Whalen, 1993; Heine, 1996; Mayers, 1978; Nakamura, 1988). Correlational studies with ESM data have also shown that there is a positive association between the time spent in flow and self-esteem in adolescents (Adlai-Gail, 1994), as well as in adults (Wells, 1988). More recently, a longitudinal study with a representative national sample of American adolescents suggested that mastering challenges in daily life might foster psychological resilience in adolescents (Schmidt, 1998).

Another field where this growth-enhancing aspect of flow has been utilized is psychotherapy (deVries, 1992; Massimini & Delle Fave, 2000). In this field of application, flow-related procedures aimed at assisting in the recovery from negative psychological symptoms are administered to individuals under psychological treatment. Such procedures are also used to cultivate meaningful life challenges and

to promote the social integration of recovering individuals (Delle Fave & Massimini, 1992; Inghilleri, 1999; Massimini, Csikszentmihalyi, & Cari, 1987; Massimini & Delle Fave, 2000). Thus, considering its potential from the perspective of optimal human development, flow can be considered a fundamental driving force behind individuals seeking to enhance their quality of life, as well as develop their own mental and emotional complexity and strength. Unfortunately, however, it seems that not all individuals enjoy this growth-enhancing state of mind as often or as intensely as might be desired. Indeed, it has been reported that the amount of time spent in flow varies across individuals (Gallup Poll, 1998; LeFevre, 1988; Noelle-Neumann, 1995).

According to Csikszentmihalyi (1975/2000, 1990, 1997), the construct of autotelic personality reflects these individual variations. The word "autotelic" is composed of two Greek roots: *auto* (means self) and *telos* (means goal). Reflecting the meaning of the word, flow theory defines an autotelic individual as one who does things for their own sake, rather than in order to achieve some external goal. In other words, an autotelic individual is a person who has a strong tendency to find intrinsic motivation and flow in his or her daily activities.

Although the autotelic personality is a central construct in flow theory and it presents one of the promising directions in flow research (Nakamura & Csikszentmihalyi, 2002), it has received little empirical attention from researchers. Among a few, Adlai-Gail (1994), studying a sample of American adolescents, showed that an autotelic group of adolescents, defined by time spent in flow, had more positive experiences in daily life and had more well-defined goals than their non-autotelic counterparts. Defining autotelics and non-autotelics by the level of intrinsic motivation a person possesses in high challenge-high skill situations, Abuhamdeh (2000) also reported that autotelic American adults experienced less stress and strain in the flow context than outside of it, whereas the reverse was true for their non-autotelic counterparts. In addition, investigating family environments, Rathunde (1988, 1996) has suggested that autotelic personality is most strongly fostered in a family environment referred to as "complex family", where support and challenge are simultaneously provided. Although these findings have certainly made contributions to the refinement of flow theory, it is also true that there still remains

much “to be learned about the nature of the autotelic personality and what qualities, meta skills, and dispositions characterize individuals inclined and able to find flow in daily life” (Nakamura & Csikszentmihalyi, 2002, p.100). Further investigation into the autotelic personality is needed because flow has significant potential for cultivating and fostering important aspects of personality, such as psychological resilience and strength, as well as improving the quality of life. Furthermore, autotelic individuals are those who tend to enjoy such potentials of flow in their daily lives. Thus, it is quite possible that such investigation could provide us with the key to realizing what positive psychology aims for - enjoyable and fulfilling lives.

The flow experience and its related psychological phenomena have been widely investigated. However, these investigations have been conducted mostly on people who grew up and resided in Western cultures. When we turn to research on the flow experience in people from Asian countries and cultures, we find that a relatively small number of studies have been conducted on this optimal state of mind and its relevant psychological phenomena, as compared to research conducted on members of Western cultures. In Japan, since a Japanese educator and sociologist, Imamura, introduced flow theory by translating Csikszentmihalyi’s “Beyond Boredom and Anxiety” into Japanese (Imamura, 1979), the theory has received attention from social and behavioral scientists as a new perspective that sheds light on the interpretation of Japanese social and cultural phenomena, from Japanese motorcycle gangs (Sato, 1988, 1991) to sacred *Shinto* music and dancing (Sako, 2003); however, such studies are scarce. As for its application, flow theory has been most widely and intensively adopted in sports and physical education in Japan, but otherwise, only a few studies have rigorously examined the flow experience itself, as well as explored its possible applications in education, mental health, and other relevant fields that aim at building quality of life (Imamura & Asakawa, 2003). Thus, considering the lack of Japanese flow research, there is no doubt that much more substantial investigations on flow and its relating psychological phenomena are needed for the Japanese. Moreover, it is necessary to extend such investigations to other non-Western cultures in order to enhance our understanding of this optimal state of mind and its effects on human existence and development.

In an effort to replicate and extend previous findings of flow research, the present study carried out a two-part investigation on a sample of Japanese college students. Administering the ESM, the first part of the present study examined whether flow theory's most basic and general hypothesis, that quality of experience is a function of perceived challenges and skills, applies to the Japanese sample. In doing so, the present author sought evidence of a relation between the flow experience and Japanese psychological well-being. When talking about their psychological well-being, the Japanese participants often mentioned the word "Jujitsu-kan," which means a sense of fulfillment. The word is commonly used by the Japanese to describe a feeling that they are fully, effectively, and energetically functioning to the limits of their existing skills; it is a sense that they are living a worth-while life. Thus, in addition to other experiential dimensions which are commonly examined in the ESM analyses, such as happiness, enjoyment, and concentration, Jujitsu-kan was examined in the present study as an indicator of psychological well-being for the Japanese in relation to their perceived challenges and skills.

The second part of the present study focused on the examination of autotelic personality. Identifying autotelics and non-autotelics in the Japanese sample by the amount of time they spent in flow, the present study compared these two groups on their weekly time allotment to daily activities and quality of experience as previous flow research has done. Moreover, in order to extend previous findings relevant to the nature of autotelic personality, the present study compared autotelics and non-autotelics on (1) how their quality of experience would change as their levels of perceived challenges and skills changed, using ESM's correlation-coefficient-as-variable strategy (Asakawa & Csikszentmihalyi, 2000; Csikszentmihalyi, Hektner, & Schmidt, 2003), and (2) how they balanced perceived challenges and skills when engaged in daily activities. Although the present study conducted a relatively wide range of analyses, the author's primary hope was to show the potential the flow experience has for developing psychological well-being in the Japanese, and further, to extend our understanding of the general flow experience itself.

Method

Participants

Data were collected at a private university in Kagawa-ken, Japan, in three waves: the academic years 1998-1999, 1999-2000, and 2000-2001. Participants were a total of 102 students (36 from the first, 38 from the second, and 28 from the third wave data collection), who volunteered to participate in the study and completed the ESM. The completion rate of the ESM was 92% for the whole study. The participants were 48 males and 54 females, and their age ranged from 19 to 24 years (M = 20.63, SD = 1.00). All participants were enrolled in an introductory psychology course in each academic year and received extra credit for participating in the study.

Procedure

The main research tool of the present study was the ESM (Csikszentmihalyi & Larson, 1987; Csikszentmihalyi, Larson, & Prescott, 1977; Larson & Csikszentmihalyi, 1983). Participants met in small groups with a member of the research team for the ESM orientation. They were given pre-programmed wristwatches which would signal them 8 times daily for a weekly total of 56 signals to fill out an ESF (Experience Sampling Form). The ESF was designed to elicit a comprehensive range of information on the participants' daily locations, activities, companions, and accompanying psychological states. The wristwatches were programmed to beep participants at a random time during every 2-hour block from 8:30 AM to 11:30 PM daily, with the restriction that no two signals would be less than 30 min apart. At the ESM orientation meeting, participants were provided with the ESF booklets and asked to fill out a sample ESF to make sure that the procedures were understood. At the end of the week, a debriefing meeting was held and the wristwatches and ESFs were returned.

In order to obtain a consistent and reliable ESM database, incomplete responses and those ESFs that were filled out more than 15 min after a signal were discarded and only participants who completed *at least* 15 ESFs were included in the database. For the present study, 102 participants completed a total of 4,197 ESFs, which amounts to a response rate of 73% (8 signals a day for 7 days x 102 participants). By comparison (Csikszentmihalyi & Larson, 1987), the response rate of blue-collar workers for the ESM was

73%, clerical and managerial workers responded up to 85% of the time, and high school students had a median response rate of 70%. Thus, the response rate of the present study was deemed acceptable.

Measures

Quality of experience. Quality of experience was examined with seven experiential items on the ESF: concentration, enjoyment, happiness, activation, satisfaction, perceived control of the situation, and perceived importance for the future. Two experiential variables - happiness and activation - were measured by 7-point semantic differential items: happy-sad, active-passive. The other variables - concentration ("How well were you concentrating?"), enjoyment ("Did you enjoy what you were doing?"), satisfaction ("Were you satisfied with yourself?"), perceived control of the situation ("Did you feel in control of the situation?"), and perceived importance for the future ("How important was it [the main activity] in relation to your future goals?") - were measured by a 10-point rating scale ranging from "not at all" to "very much."

In addition, participants' Jujitsu-kan, a sense of fulfillment, was evaluated by the question, "What level of Jujitsu-kan were you getting when you were signaled?" Responses were given on a 9-point rating scale ranging from "low" to "high." The measurement of this experiential variable was administered only in the third wave of data collection.

Allocation of time to various activities. The types of activities a participant was engaged in when signaled were measured by the open-ended question on the ESF, "As you were beeped ... What was the main thing you were doing?" Answers were coded into approximately 180 subcategories. The interrater reliability on this measure was 92%. According to previous ESM research (Csikszentmihalyi & Larson, 1987; Wong & Csikszentmihalyi, 1991), the interrater reliability on the same measure ranged from 88% to 95%. In the ESM activity analyses, these subcategories were aggregated into several main activities, such as schoolwork, extracurricular activities, job/work, life-planning, socializing, sports/games, watching television, watching movies or videos, listening to music, doing hobbies, thinking, maintenance activities (i.e., eating, grooming, showering, resting, etc.), and so on.

Measuring flow and autotelic personality. Two experiential items on the ESF - perceived

challenges ("Level of challenges of the activity") and perceived skills ("Level of your skills in the activity") - were used to determine the flow condition and the other experiential conditions of the flow theory; anxiety, relaxation, and apathy. Responses to these two variables were given on 9-point rating scales ranging from "low" to "high." Conventionally, two ways of defining the flow condition using perceived challenges and skills have been adopted (Csikszentmihalyi & Rathunde, 1993; Csikszentmihalyi, Hektner, & Schmidt, 2003). The first approach classifies all ESM responses into one of four quadrants, depending on whether perceived challenge and skill are above the individual's weekly average or not (Csikszentmihalyi & LeFevre, 1989; Massimini & Carli, 1988), whereas the second approach classifies all ESM responses into the same four quadrants, but depending on whether perceived challenge and skill are above the group average or not (Adlai-Gail, 1994; Csikszentmihalyi, Rathunde, & Whalen, 1993). The present study adopted the second approach because the author believed that it would show a better picture of the flow experience based on the idea that some individuals may never experience flow, whereas others may experience flow frequently. Indeed, it has been reported that over one third of those surveyed in the U.S. and Germany rarely or never experienced flow (Gallup Poll, 1998; Nakamura & Csikszentmihalyi, 2002; Noelle-Neumann, 1995). If using the first model, almost all individuals will have at least one ESM response in the flow condition over 1 week of ESM administration, and this may not sufficiently capture individual differences in the tendency to seek and experience flow. Thus, in order to gain a more realistic picture of the flow experience in terms of the time people spend in flow, the present study defined the flow condition as situations where both perceived challenges and skills were above the group average, whereas the relaxation condition was defined as situations where skills, but not challenges, were above the group average. The anxiety condition was defined as situations where challenges, but not skills, were above the group average, whereas the apathy condition was defined as situations in which both challenges and skills were below the group average.

Flow theory posits that an autotelic individual is more likely than others to experience flow in everyday life. Thus, the present study operationalized the construct of autotelic personality by the amount of time students spent in the flow condition defined as above. In order to identify the autotelic

and non-autotelic groups, the percentage of time spent in the flow condition over a week (i.e., the percentage of ESM responses which were answered in situations where both challenges and skills were above the group average) was calculated for each student. Then, 26 students in the upper quartile and 26 students in the lower quartile on the measurement were classified as autotelic and non-autotelic, respectively. In the following analyses, these two groups were compared on their time usage and subjective experiences in various activities and situations. The two groups were also compared on how their quality of experience changed as their levels of perceived challenges and skills changed, as well as on how they balanced perceived challenges and skills when engaged in daily activities.

Results

The Quality of Experience as a function of perceived challenges and skills

The first goal of the present study was to examine the applicability of flow theory to a Japanese sample. In order to examine how the quality of experience changed as perceived challenges and skills changed for the sample, the present study tentatively classified all ESM responses into four experiential regions (i.e., from Flow 1 to Flow 4) and the rest. This mapping is shown in Figure 1. For the classification, three cutoff points were used for the two experiential dimensions of perceived challenges and skills: the group mean minus one standard deviation, the group mean, and the group mean plus one standard deviation. The obtained experiential regions (Flow 1 to Flow 4) may roughly represent a flow channel along which challenges and skills are to some extent in balance and their levels gradually increase (Csikszentmihalyi, 1975/2000, Csikszentmihalyi & Csikszentmihalyi, 1988; Nakamura & Csikszentmihalyi, 2002).

(Insert Figure 1 about here)

Table 1 shows the Japanese college students' quality of experience in the four different regions of the flow channel defined as above. Here, it was expected that the intensity of flow gradually increased along this channel. As flow theory predicts, as the level of flow (or complexity of flow activities) increased along the flow channel, the students' concentration, enjoyment, happiness, activation,

satisfaction, perceived control of the situation, and perceived importance for the future also increased; concentration, $F(3, 2593) = 314.30$, $p < .001$; enjoyment, $F(3, 2588) = 119.15$, $p < .001$; .happiness, $F(3, 2593) = 31.46$, $p < .001$; activation, $F(3, 2592) = 233.97$, $p < .001$; satisfaction, $F(3, 2589) = 160.28$, $p < .001$; perceived control of the situation, $F(3, 2585) = 217.03$, $p < .001$; perceived importance for the future, $F(3, 2593) = 196.31$, $p < .001$. Moreover, their level of Jujitsu-kan - an index of psychological well-being for the Japanese - also increased, as the level of flow increased along the flow channel, $F(3, 798) = 233.91$, $p < .001$.

(Insert Table 1 about here)

The Quality of Experience While in Flow, Anxiety, Relaxation, and Apathy Conditions

In order to further examine flow theory's applicability to this cultural group, the present study again classified all ESM reports into four experiential conditions according to a conventional flow model; (1) flow, (2) relaxation, (3) anxiety, and (4) apathy conditions, based on the splits at the group means of perceived challenges and skills, as discussed earlier. Table 2 shows the quality of experience in each of the four conditions. As expected, the Japanese college students' levels of concentration, enjoyment, happiness, activation, satisfaction, perceived control of the situation, and Jujitsu-kan (a sense of fulfillment) were the highest in the flow condition, whereas their levels of the same experiential dimensions, except for happiness, were the lowest in the apathy condition; concentration, $F(3, 4173) = 313,13$, $p < .001$; enjoyment, $F(3, 4166) = 171.65$, $p < .001$; activation, $F(3, 4172) = 177.36$, $p < .001$; satisfaction, $F(3, 4168) = 165.96$, $p < .001$; perceived control of the situation, $F(3, 4163) = 205.00$, $p < .001$; Jujitsu-kan, $F(3, 1342) = 197.31$, $p < .001$. The students reported the lowest level of happiness in the anxiety condition, $F(3, 4174) = 25.39$, $p < .001$. As for the level of perceived importance of the activity for the future, they scored the highest in the anxiety condition and the lowest in the apathy condition, $F(3, 4173) = 244.82$, $p < .001$. According to these results, high levels of perceived challenges and skills appeared to be essential for the Japanese college students to enjoy high quality of overall experience in everyday life, as flow theory postulates. Moreover, considering the high level of Jujitsu-kan observed in the flow condition, balanced high-challenge, high-skill situations appeared to be

key for psychological well-being for the Japanese.

(Insert Table 2 about here)

Time in the Flow Condition and the Overall Quality of Experience

Flow theory assumes a positive association between the time spent in flow and the quality of experience. Table 3 shows the correlation coefficients between the percentage of time the Japanese students spent in the flow condition and their overall subjective experience during the ESM week. The quality of experience was examined using the same eight experiential dimensions. The results showed that increases in the time spent in the flow condition were associated with higher levels of all the experiential dimensions, except for happiness; concentration, $r = .54$, $p < .001$; enjoyment, $r = .32$, $p < .001$; activation, $r = .34$, $p < .001$; satisfaction, $r = .42$, $p < .001$; perceived control of the situation, $r = .46$, $p < .001$; perceived importance for the future, $r = .33$, $p < .001$; Jujitsu-kan, $r = .56$, $p < .01$; happiness, $r = .05$, ns. In other words, the students who spent more time in the flow condition during the week showed higher concentration, felt more enjoyment, were more active, felt more satisfaction, felt more in control, felt more importance for the future, and felt stronger Jujitsu-kan than the students who spent less time in the balanced high-challenge, high-skill situations of flow.

(Insert Table 3 about here)

Comparison between Autotelic and Non-autotelic Japanese College Students on the Percentage of Time Spent in Daily Activities

To extend the examination of flow theory, the present study carried out an exploratory investigation on the autotelic personality. For the following analyses, 26 autotelic students and 26 non-autotelic students were identified based on the percentage of time they spent in the flow condition and then compared on their time allotment and quality of experience.

Table 4 shows how the autotelic and non-autotelic students spent their time in various activities during the week period. The values in the table indicate a weekly average of the percentage of time each group of students spent in the listed activities. The results indicated that there was no significant difference between the two groups in time allotment, except for two marginal differences found for

schoolwork ($t(50) = 1.79$, $p = .080$) and overall active leisure ($t(50) = 1.77$, $p = .082$); the autotelic students tended to spend more time in schoolwork and overall active leisure than their non-autotelic counterparts. Thus, for the Japanese college students, although some marginal differences were found, it appears that being autotelic or non-autotelic did not significantly influence how they spent their time.

(Insert Table 4 about here)

Comparison between Autotelic and Non-autotelic Japanese College Students on Quality of Experience

In the next analysis, the autotelic and non-autotelic groups of students were compared on their overall experience, as well as experiences in various types of activities they engaged in during the week period. These activities included productive activities, TV viewing, socializing activities, and maintenance activities. The quality of subjective experience was examined with seven experiential dimensions - concentration, enjoyment, happiness, activation, satisfaction, perceived control of the situation, and perceived importance for the future. The results are presented in Table 5.

First of all, the autotelic students rated most of the experiential dimensions significantly higher than the non-autotelic students for overall quality of experience, except for happiness (concentration, $t(50) = 5.08$, $p < .001$; enjoyment, $t(50) = 2.93$, $p < .01$; activation, $t(50) = 2.33$, $p < .05$; satisfaction, $t(50) = 4.23$, $p < .001$; perceived control, $t(50) = 4.48$, $p < .001$; perceived future importance, $t(50) = 3.18$, $p < .01$; happiness, $t(50) = .31$, ns). That is, on average the autotelic students were more concentrated, felt more enjoyment, were more active, felt more satisfaction, felt more control, and felt more importance for the future, than the non-autotelic students during the week period.

These differences between the two groups were in a sense expected because the autotelic students were, by definition, those who spent more time than the non-autotelic students in the flow condition where people usually enjoy high quality of experience. However, when we closely looked at differences between the two groups in their experience while doing specific activities, some characteristics of the autotelic individuals became more apparent. When engaged in all of the activities listed in the table, the autotelic group's levels of concentration and perceived control of the situation were significantly higher than those of the non-autotelic group's, (*concentration*: productive activities, $t(50) = 3.23$, p

< .01; TV watching, $t(45) = 3.03$, $p < .01$; socializing, $t(47) = 2.39$, $p < .05$; maintenance, $t(50) = 3.79$, $p < .001$; *perceived control*: productive activities, $t(50) = 3.01$, $p < .01$; TV watching, $t(45) = 2.96$, $p < .01$; socializing, $t(47) = 2.49$, $p < .05$; maintenance, $t(50) = 3.95$, $p < .001$). Moreover, the autotelic students' levels of perceived future importance tended to be higher than that of the non-autotelic students in these activities except for productive activities (productive activities, $t(50) = 1.56$, ns; TV watching, $t(45) = 1.91$, $p < .10$; socializing, $t(47) = 2.31$, $p < .05$; maintenance, $t(50) = 1.93$, $p < .10$). The productive activities were composed of schoolwork, working, and life planning activities that might be important in relation to their future goals for both autotelic and non-autotelic Japanese college students. Thus, it is quite understandable that no significant difference was found between these two groups in perceived future importance when they were engaged in productive activities. However, what is worth-mentioning here is that the autotelic students were more concentrated, felt more in control of the situation, and felt more importance for the future than the non-autotelic students even when watching TV or doing maintenance activities, which are typically considered unimportant and unworthy of significant attention. Thus, it appears that the autotelic students were those who tended to use their psychic energy more fully on activities at hand, and who were more actively and constructively engaged with their everyday lives, as compared to their non-autotelic counterparts.

(Insert Table 5 about here)

Comparison between Autotelic and Non-autotelic Japanese College Students on how their Quality of Experience changed as their perception of challenges and skills changed

Flow theory postulates that an autotelic person is one who finds enjoyment in challenging activities. But does a person who has the autotelic personality really like challenges? In an attempt to answer this question, the present study examined how the Japanese students' quality of experience changed as their perceptions of challenges and skills changed. For the examination, first correlation coefficients between the levels of perceived challenges and skills and other experiential dimensions were calculated for each student, and then, the obtained correlation coefficients were further normalized through Fisher's *Z* transformation. Here, these “within-person” correlation coefficients were used as a

personality characteristic unique to each student (Csikszentmihalyi, Hektner, & Schmidt, 2003). Table 6 shows the autotelic and non-autotelic groups' average *Z*-transformed correlation coefficients between perceived challenges and skills and other experiential dimensions. For example, the *Z*-transformed correlation coefficient between perceived challenge and concentration is 0.54 for the autotelic group, as seen in the table. This means that the autotelic group's perception of challenge and concentration (perceived challenge x concentration) covaried positively with average of 0.54 *Z*-transformed correlation coefficient.

The results showed that although the *Z*-transformed correlations among perceived challenge and other experiential dimensions were relatively high for both groups, the autotelic students' perception of challenge and their levels of concentration (perceived challenges x concentration), enjoyment (perceived challenge x enjoyment), happiness (perceived challenges x happiness), activation (perceived challenges x activation), and satisfaction (perceived challenges x satisfaction) covaried more positively and more strongly as compared to those of the non-autotelic students; concentration, $t(50) = 1.74$, $p = .088$ (marginal significance); enjoyment, $t(50) = 2.79$, $p < .01$; happiness, $t(50) = 2.10$, $p < .05$; activation, $t(50) = 1.96$, $p = .055$ (marginal significance); satisfaction, $t(50) = 1.82$, $p = .074$ (marginal significance). In other words, the autotelic students' levels of concentration, enjoyment, happiness, activation, and satisfaction tended to go up in a stronger manner as their level of perceived challenge went up, as compared to those of non-autotelic students. However, there was no significant difference between the two groups in average *Z*-transformed correlation coefficients between their perceived skill and the other same experiential dimensions. That is, if the autotelic and non-autotelic students had a similar level of perception of their skills or abilities when engaged in certain activities, they were more likely to have similar experiences. Considering these results, it appears that autotelic and non-autotelic students differ on how they experience challenging activities or situations.

(Insert Table 6 about here)

Comparison between Autotelic and Non-autotelic Japanese College Students on how they balanced perceived challenges and skills in their everyday life

In flow theory, the balance between perceived challenges and skills is an important factor to experience flow. With regard to this postulation, it can be said that autotelic individuals are those who consciously or unconsciously know how to match their perceived challenges and their own skills. In an attempt to investigate this possibility, the present study examined in the next analysis whether there were any differences between the autotelic and non-autotelic students in their group averages of absolute, as well as simple, values of difference between the levels of perceived challenges and skills. The absolute and simple values of difference between the two variables are indicated as | challenge - skill | and (challenge - skill) in Table 7, respectively.

As the table shows, the autotelic students' average of the absolute value of difference between perceived challenges and skills was significantly smaller than that of non-autotelic students; $t(50) = -2.34$, $p < .05$. This means that the autotelic students' levels of perceived challenge and skill were more balanced than those of non-autotelic students. Moreover, the autotelic students' simple value of difference between challenge and skill was positive (.37), while that of non-autotelic students was negative (-.61), and they were significantly different; $t(50) = 2.30$, $p < .05$. This result indicates that the autotelic students were more often in situations where their perceived challenges were higher than their perceived skills, whereas the non-autotelic students were more often in situations where their perceived skills were higher than their perceived challenges.

(Insert Table 7 about here)

In order to further examine these characteristics of the autotelic and non-autotelic students observed in the previous analysis, using all 102 students in the sample, the present study examined whether there was any relation between amount of time each student spent in the flow condition during the week period and his or her weekly averages of the absolute and simple values of difference between perceived challenges and skills. Table 8 shows the correlation coefficients between the percentage of time each student spent in the flow condition and his or her weekly averages of absolute as well as simple values of difference between perceived challenges and skills. According to the results, the percentage of time in the flow condition was negatively associated with the absolute value of difference between

challenge and skill (r = -.31, p < .01), and positively associated with the simple value of difference between the two variables (r = .30, p < .01). These results indicate that if a student spent more time in the flow condition (in other words, if a student was more autotelic than others) his or her perceived challenges and skills were more balanced than others, and the student was more likely to have a tendency to position himself or herself in situations where challenges of activities were higher than his or her own skills.

(Insert Table 8 about here)

Discussion

The present study attempted to replicate findings of previous flow research with a sample of Japanese college students, and further, to provide information to extend our understanding of the flow experience and the autotelic personality. An underlying purpose of the present study was to obtain some evidence that the flow experience, defined by perceived challenges and skills, would have positive effects on psychological well-being for the Japanese. Furthermore, based on an investigation into the nature of autotelic personality, the present study hoped to gain insight into how individuals can develop abilities to enjoy this growth-enhancing state of mind.

First of all, the present study examined whether flow theory's most basic and general hypothesis, that quality of experience was a function of perceived challenges and skills, was applicable to the Japanese sample. As expected, as the level of flow became higher along the flow channel (see Figure 1 for the mapping of flow channel), the Japanese college students' quality of experience improved significantly, in terms of concentration, enjoyment, happiness, activation, satisfaction, perceived control of the situation and perceived future importance, as flow theory expects. Their level of Jujitsu-kan, an index of psychological well-being for the Japanese, also increased, as the flow experience increased in complexity. Moreover, it was also found that the students' levels of concentration, enjoyment, happiness, activation, satisfaction, perceived control of the situation, and Jujitsu-kan were the highest in the flow condition as defined in a conventional flow model.

According to these results, high levels of perceived challenges and skills appeared to be essential for this Japanese sample to improve the quality of their daily life experience. Moreover, considering the higher level of Jujitsu-kan that was observed in the flow condition and also at the higher level of the flow channel, balanced high-challenge/high-skill situations appeared to be key to psychological well-being for the Japanese. Indeed, the correlational analysis showed that the weekly percentage of time the students spent in the flow condition was positively associated with their overall quality of experience, in terms of concentration, enjoyment, activeness, satisfaction, perceived control of the situation, perceived future importance, and Jujitsu-kan. However, no significant correlation was found between overall happiness and the percentage of time spent in the flow condition. This is probably because these students felt relatively high levels of happiness both when they were in the relaxation (low challenge/high skill) condition and flow condition. With regard to this, Nakamura and Csikszentmihalyi (2002) suggested that the relaxation condition involved conservation of energy and that it was intrinsically rewarding. Thus, it is possible that students who spent a small amount of time in the flow condition had relatively higher levels of overall happiness. In all, it appears that the more time they spent in flow, the more the Japanese students developed psychologically healthy states of mind.

Considering the need for further development of flow theory and its application, the author believes that these findings are important in two ways. First, they provided clear evidence of flow theory's applicability to the Japanese. That is, the findings suggested the universality of flow experience and its potential for building positive quality in life. Secondly, these findings indicated that flow had positive effects on psychological well-being for the Japanese. In the West, such positive effects of flow have already been utilized in psychotherapy to help individuals recover from negative psychological symptoms, and furthermore, to cultivate a meaningful life (Delle Fave & Massimini, 1992; Inghilleri, 1999; Massimini, Csikszentmihalyi, & Cari, 1987; Massimini & Delle Fave, 2000). However, psychologists and other practitioners in the clinical field in Japan have not yet fully paid attention to the promotion of mental health and psychological well-being. In broader terms, positive psychology has begun to be recognized in recent years in Japan; however, the current positive psychology movement in

Japan is not nearly as strong as the current movement in Europe and the U.S. The present author believes, and also hopes, that the findings of the present study will provide an index for the Japanese to maintain and further develop their mental health and quality of life.

Relating to the issue of psychological well-being, which could possibly be promoted by experiencing flow, the second part of the present study conducted several examinations on the autotelic personality. For these examinations, 26 autotelic and 26 non-autotelic Japanese college students were discriminated based on the amount of time they spent in flow, and these two groups were then compared on time allotment, quality of experience, and the way they balanced their perceived challenges and skills in their daily activities.

With regard to time allotment of autotelic individuals, Adlai-Gail (1994) reported that autotelic American teenagers spent significantly more time in studying, hobbies, and sports, but spent less time in TV viewing than their non-autotelic counterparts. Adbuhamdeh (2000) also investigated the nature of autotelic personality with a sample of American adults and reported that autotelics spent significantly more time in active leisure (i.e., writing, sports, games, hobbies), and spent significantly less time in passive leisure (i.e., watching TV/movie, listening to music, reading, computer games/internet), as compared to non-autotelics in the sample. Contrary to these previous findings, the present study did not obtain clear differences between the autotelic and non-autotelic groups of the Japanese college students in time usage. Whether they were autotelic or not, both groups seemed to have a relatively fixed college student life. For the Japanese sample, it appeared that being autotelic or non-autotelic did not significantly influence how they spent their time. Then, what makes these groups different?

The comparison of quality of experience between the two groups provided some answers to this question. The autotelic Japanese students reported significantly more positive experiences than their non-autotelic counterparts during the week period. Moreover, the autotelic students were significantly more concentrated, felt more control of the situation, and felt more importance for the future than the non-autotelic students, even when watching TV and engaging in maintenance activities, which are typically considered unimportant and unworthy of much attention. In relation to this, Nakamura and

Csikszentmihalyi (2002) pointed out “the phenomenology of the flow reflects attentional process” (p.92). That is, entering and staying in flow requires that attention be focused on activities at hand, and then held there. Nakamura and Csikszentmihalyi (2002) further argued that intense concentration, which was the defining quality of flow, indicated that attention or psychic energy was fully invested in on-going interactions with environment. Based on these arguments, it may be said that the autotelic Japanese college students were those who invested more attention or psychic energy in activities at hand, as compared to their non-autotelic counterparts, even though those activities were not generally considered important and worthy of attention.

Another finding in this part of the analysis is that the autotelic students reported higher levels of perceived future importance than the non-autotelic students, even when watching TV and doing maintenance activities. Relating to this result, James (1890/1981) pointed out that our experience is shaped by what we notice in the situation we are in. This claim is important to consider when we try to understand the nature of autotelic personality (Nakamura & Csikszentmihalyi, 2002). That is, compared to their non-autotelic counterparts, the autotelic Japanese students appear to have noticed something important for their future goals in watching TV and engaging in maintenance activities. It was as if the autotelic students found meaning relevant to their future in these activities, whereas the non-autotelic students did not interpret the same activities as significant for their future. Considering these observed differences between the two groups in quality of experience, we may be able to say that the autotelic Japanese college students were those who tended to use their psychic energy more fully on activities at hand, and those who were more actively and constructively engaged with their everyday lives, as compared to their non-autotelic counterparts.

The ESM’s correlation-coefficient-as-variable analysis (using Fisher’s *Z*-transformed correlation coefficients) further provided information on how differently the autotelic and non-autotelic students’ quality of experience changed as their perceptions of challenges and skills changed. The results showed that the autotelic students' levels of concentration, enjoyment, happiness, activation, and satisfaction tended to increase in a stronger manner as their level of perceived challenge increased, as

compared to those of the non-autotelic students. However, there was no significant difference between the two groups in average *Z*-transformed correlation coefficients between their perceived skill and the same experiential dimensions. Thus, it appears that autotelic and non-autotelic students differ on how they experience challenges. In other words, the autotelic individuals appeared, as flow theory would predict, to be those who enjoyed challenges and who could improve their quality of experience by facing challenging situations in their daily lives (Csikszentmihalyi, 1975/2000, 1990; Hektner & Asakawa, 2000).

Moreover, according to flow theory, the balance between perceived challenges and skills is crucial in order to experience flow. Therefore, it is natural to think that autotelic individuals are those who consciously or unconsciously know how to match their levels of perceived challenges and skills. In order to examine this point, the present study compared the autotelic and non-autotelic students on how they balanced perceived challenges and skills when engaged in daily activities. The results showed that the autotelic students' levels of perceived challenge and skill were more balanced than those of the non-autotelic students. Moreover, the results suggested that the autotelic students had a tendency to position themselves in situations where their perceived challenges were higher than their perceived skills, whereas the reverse was true for the non-autotelic students. Here Vygotsky's concept of "Zone of proximal development" (Vygotsky, 1978) comes to mind. The concept defines skills (or functions) that have not yet developed but are in the process of development. There, the level of challenges is slightly higher than that of achieved skills, and by stretching the skills, an individual can eventually and successfully develop skills of higher levels without being overwhelmed. In this sense, such challenges are optimal for individual development. The autotelic students appeared to create such optimal challenges in which their perceived challenges were slightly higher than their existing skills and enjoyed experience of flow which would in turn result in developing a more complex set of capacities for engaging in daily life (cf. Nakamura & Csikszentmihalyi, 2002).

These findings may further indicate that the autotelic students had some competencies or meta-skills which predisposed them to entering and remaining in flow, and to making the process evolve

(see Csikszentmihalyi & Nakamura, 1984; Nakamura & Csikszentmihalyi, 2002). Csikszentmihalyi and Nakamura (1984) argued that these meta-skills included "capacities (1) to focus attention on the present moment and the activity at hand; (2) to define one's goals in an activity and identify the means for reaching them; (3) to seek feedback and focus on its informational aspects" (pp. 66-67); and (4) to continuously adjust the balance between perceived challenges and skills. Considering Csikszentmihalyi and Nakamura's argument together with the findings of the present study, the author suggests that the autotelic students were those who easily found or actively created optimal challenges in activities at hand by fully using their psychic energy, and who enjoyed their activities in flow. On the other hand, the non-autotelic students were those who were unaware of, or failed to create meaningful challenges in their activities due to an inability or unwillingness to fully exert their psychic energy for the activities at hand. Thus, as Csikszentmihalyi and Nakamura (1984; Nakamura & Csikszentmihalyi, 2002) suggested, the autotelic personality seems to be a construct which reflects individual differences in attentional processes rather than differences in structural and life circumstances that people consciously or unconsciously select or engage in their daily lives. Although the present study could not provide information on how the autotelic students went about matching their perceived challenges and skills and how they created optimally challenging situations in their daily activities, the image of autotelic individuals obtained by the present study converges with the one depicted by Csikszentmihalyi and Nakamura (1984; also see Nakamura & Csikszentmihalyi, 2002).

In conclusion, the present study provided some evidence that flow theory is applicable to the Japanese. Moreover, an index of psychological well-being for the Japanese - Jujitsu-kan - was also reported by the Japanese sample to be high during periods of flow. Well-being is a culturally constructed concept, which has diverse meanings and modes of expressions embedded in a specific cultural context. Thus, further investigation on the relationship between Japanese indigenous conceptions of well-being and flow is surely needed in order to more strongly argue flow based promotion of well-being in the Japanese. At this preliminary stage of investigation on flow and Japanese well-being, the present author believes that flow theory and its potential for application are quite promising for fostering psychological well-being in

the Japanese, as well as for developing their quality of life.

Moreover, the present study provided empirical support for the autotelic personality, a central theoretical construct of flow theory. The results indicated that autotelic individuals were those who liked challenges, who tended to invest their psychic energy intensively in activities at hand, who actively and constructively engaged with daily life, and who somehow created optimal challenges in on-going daily activities. Although these findings may make some contributions to the further development of flow theory, it is also true that we still do not know much about how autotelic individuals create such optimal challenges, how their attentional process has been developed in order to enter flow and stay in it, and in broader terms, what critical contributors and obstacles exist to the development of the autotelic personality (Nakamura & Csikszentmihalyi, 2002). Thus, further research is surely needed on the nature of autotelic personality to improve our understanding of the flow experience itself, as well as to develop a more robust and refined theory of flow and its educational and therapeutic applications for the Japanese, as well as for people across cultures.

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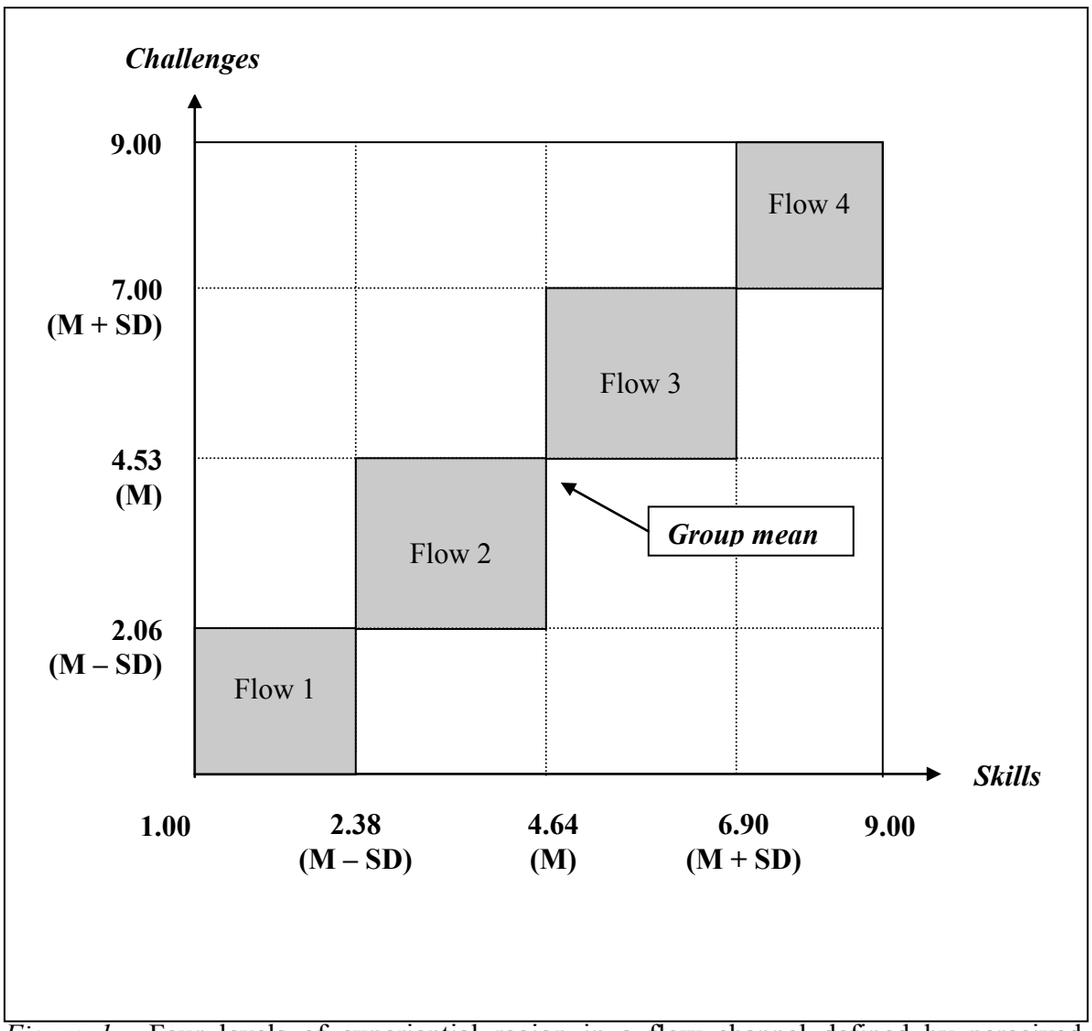

Figure 1. Four levels of experiential region in a flow channel defined by perceived challenges and skills. Challenges: Min=1.00, Max=9.00, *M*=4.53, SD=2.47; Skills: Min=1.00, Max=9.00, *M*=4.64, SD=2.26.

Table 1

Quality of Experience in Different Levels of Experiential Region in Flow Channel

Quality of experience	Levels of flow				*F*
	Flow 1 (N = 666)	Flow 2 (N = 566)	Flow 3 (N = 837)	Flow 4 (N = 526)	
Concentration	3.86	5.03	6.16	7.71	314.30***
Enjoyment	3.34	4.32	5.23	6.02	119.15***
Happiness	3.27	3.49	3.56	4.03	31.46***
Activation	2.59	3.11	3.51	4.43	233.97***
Satisfaction	3.28	4.02	4.87	6.08	160.28***
Perceived control of the situation	3.17	4.09	5.11	6.44	217.03***
Perceived future importance	2.09	3.35	4.26	5.18	196.31***
Jujitu-kan (a sense of fulfillment)	2.87[a]	4.14[b]	5.64[c]	7.80[d]	233.91***

[a] N = 146, [b] N = 175, [c] N = 300, [d] N = 178.

***p < .001.

Table 2

Quality of Experience While in Flow, Anxiety, Relaxation, and Apathy Conditions.

Quality of experience	Conditions of experience				*F*
	Flow (N = 1781)	Anxiety (N = 374)	Relaxation (N = 582)	Apathy (N = 1440)	
Concentration	6.84	5.93	5.12	4.38	313.13***
Enjoyment	5.50	3.97	4.78	3.79	117.65***
Happiness	3.73	3.24	3.45	3.36	25.39***
Activation	3.88	3.24	3.11	2.84	177.36***
Satisfaction	5.38	3.95	4.20	3.61	165.96***
Perceived control of the situation	5.62	4.03	4.46	3.56	205.00***
Perceived future importance	4.69	4.80	2.76	2.67	244.82***
Jujitu-kan (a sense of fulfillment)	6.56[a]	4.85[b]	5.12[c]	3.51[d]	197.31***

[a] N = 632, [b] N = 137, [c] N = 183, [d] N = 391.

***p < .001.

Table 3

Correlations between percentage of time spent in flow condition and the quality of experience (N = 102)

Quality of experience	
Concentration	.54***
Enjoyment	.32***
Happiness	.05
Activation	.34***
Satisfaction	.42***
Perceived control of the situation	.46***
Perceived future importance	.33***
Jujitu-kan [a] (a sense of fulfillment)	.56**

[a] $N = 28$; **$p < .01$; ***$p < .001$.

Table 4

Percentage of Time in Various Activities Over 1 Week

	Autotelic (N = 26)	Non-autotelic (N = 26)	t-Value
Productive	25.73	21.43	1.44
School work	14.02	10.14	1.79~
Job/work	11.13	10.90	.09
Life planning	.59	.39	.45
Socializing	14.32	14.63	-.13
Thinking	.40	.73	-.74
Active leisure	17.33	12.98	1.77~
Extracurricular activities	5.34	4.77	.27
Sports/games	3.87	2.08	1.52
Hobbies	8.13	6.13	1.01
Passive leisure	11.75	14.85	-1.74
Television	10.21	13.35	-1.28
Watching movies or videos	.78	1.21	-.78
Listening to music or the radio	.75	.29	1.27
Maintenance	21.66	24.62	-1.04
Eating	4.22	6.30	-1.52
Grooming/personal care	2.69	3.50	-.90
Resting	7.89	7.84	.03
In transit	6.13	6.28	-.12
Other	8.81	10.40	-.86

Note: Reported p-levels are two-tailed.

~$p < .10$.

Table 5.

Quality of Experience for Autotelic and Non-Autotelic Groups

	Autotelic (N = 26)	Non-autotelic (N = 26)	t-Value
Overall			
Concentration	6.57	5.12	5.08***
Enjoyment	5.19	4.35	2.93**
Happiness	3.60	3.57	.31
Activation	3.58	3.30	2.33*
Satisfaction	5.30	4.07	4.23***
Perceived control of the situation	5.47	3.96	4.48***
Perceived future importance	4.38	3.21	3.19**
Productive activities			
Concentration	6.45	5.31	3.23**
Enjoyment	3.86	3.02	1.82~
Happiness	2.98	3.21	-1.51
Activation	3.38	3.27	.51
Satisfaction	4.70	3.84	2.36*
Perceived control of the situation	5.24	3.89	3.01**
Perceived future importance	5.63	4.79	1.56
TV watching			
Concentration	6.16	4.43	3.03**
Enjoyment	5.91	5.30	1.05
Happiness	3.81	3.51	1.05
Activation	3.30	2.87	1.88~
Satisfaction	5.23	3.97	2.36*
Perceived control of the situation	5.63	3.85	2.96**
Perceived future importance	2.71	1.92	1.91~
Socializing			
Concentration	6.86	5.64	2.39*
Enjoyment	6.56	6.09	1.14
Happiness	4.24	4.32	-.30
Activation	4.04	4.00	.15
Satisfaction	6.22	5.15	2.26
Perceived control of the situation	5.99	4.74	2.49*
Perceived future importance	4.95	3.64	2.31*
Maintenance activities			
Concentration	6.31	4.91	3.79***
Enjoyment	5.03	4.11	1.91~
Happiness	3.77	3.66	.48
Activation	3.34	3.29	.31
Satisfaction	5.40	4.01	3.61***
Perceived control of the situation	5.26	3.36	3.95***
Perceived future importance	3.50	2.70	1.93~

Note: Reported p-levels are two-tailed.

~$p < .10$; *$p < .05$; **$p < .01$; ***$p < .001$.

Table 6

How Do the Experiential Dimensions Co-vary with Perceived Challenge and Skill in Each Person? (Comparison Between Autotelic and Non-autotelic Groups on Average Z-transformed Correlation Coefficient Between Two Experiential Dimensions)[a]

Experiential dimensions	Autotelic (N = 26)	Non-autotelic (N = 26)	t-Value
Perceived challenge			
x Concentration	.54	.39	1.74~
x Enjoyment	.35	.14	2.79**
x Happiness	.29	.12	2.10*
x Activation	.51	.35	1.96~
x Satisfaction	.41	.26	1.82~
x Perceived control	.37	.27	1.06
Perceived skill			
x Concentration	.38	.31	.90
x Enjoyment	.32	.27	.77
x Happiness	.25	.21	.42
x Activation	.43	.34	1.10
x Satisfaction	.39	.32	.75
x Perceived control	.37	.31	.67

[a]Values represent Z-transformed correlation coefficient between two experiential dimensions. Reported p-levels are two-tailed.

~$p < .10$; *$p < .05$; **$p < .01$.

Table 7

Comparison Between Autotelic and Non-autotelic Groups on Average Difference Between Perceived Challenge and Skill

Difference	Autotelic (N = 26)	Non-autotelic (N = 26)	t-Value
| challenge – skill |	.89	1.75	-2.34*
(challenge – skill)	.37	-.61	2.30*

Note: Reported p-levels are two-tailed.

*$p < .05$.

Table 8

Correlations of Percentage of Time in Flow Condition with | Challenge – Skill | and (Challenge – Skill)

	| challenge – skill |	(challenge – skill)
% of Time in flow condition	-.31**	.30**

Note: Reported p-levels are two-tailed.

N = 102.

**$p < .01$.