Universidade do Minho
Escola de Psicologia

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Flow Experience in Startups and Relations with Job Characteristics and Motivation: an exploratory study

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**Flow Experience in Startups and
Relations with Job Characteristics and
Motivation: an exploratory study**

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Mestrado Integrado em Psicologia

Trabalho efetuado sob a orientação da

Professora Doutora Teresa Freire

junho de 2017

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Nome: Inês Sofia Alves do Vale

Endereço Eletrónico: a68797@alunos.uminho.pt

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" Perseguir, sem cessar, **uma meta**: este é o segredo do **sucesso**"

Anna Pavlova

Flow Experience in Startups and Relations with Job Characteristics and Motivation: an exploratory study

The concept of flow has been identified as a set of interrelated constructs that allows satisfaction and employee well-being. The present study aims to explore the quality of daily life on startups, using the *Experience Sampling Method* (ESM). In line with this, was investigated the quality of experience in terms of internal and external dimensions, as well as, the variations of states that characterized the daily experience. Finally, the relationship between flow state, work motivation and stable job characteristics was taking account. This study was conducted with a sample of 14 participants from Startup Braga, an innovation hub created to support the devolving of potential entrepreneurial projects. Results revealed that participants spent more time in control state. Moreover, non-productive activities showed more positive affect, motivation, control and skills (internal dimensions of experiences) than productive activities. The job characteristics included were not, however, significantly related to internal dimensions of flow state.

Keywords: Flow; job characteristics, work motivation; startups

A Experiência de Flow em Startups e Relações com a Características do Trabalho
e a Motivação: um caso de estudo

O conceito de flow tem sido identificado como um conjunto de conceitos interrelacionados que permitem a satisfação e o bem-estar no trabalho. O objetivo do presente estudo é explorar o dia-a-dia, usando o *Experience Sampling Method* (ESM). Posto isto, foi investigado a qualidade da experiência em termos de dimensões internas e externas, bem como, as variações de estados que caracterizam a experiência do dia-a-dia. Por último, a relação entre o estado de flow, motivação e as características do trabalho foram tidas em conta. O estudo foi conduzido com uma amostra de 14 participantes do Startup Braga, que é um *hub* de inovação desenhado para apoiar a criação e o desenvolvimento de projetos empreendedores com elevado potencial. Os resultados revelaram que os participantes despendem mais tempo num estado de controlo. Adicionalmente, as atividades não produtivas mostraram mais afeto positivo, motivação, controlo e competências (dimensões internas da experiência) do que as atividades produtivas. No entanto, não foram encontradas associações significativas entre as características do trabalho e as dimensões internas do estado de *flow*.

Palavras-chave: *Flow*; características do trabalho; motivação; startups

Introduction

Positive psychology was introduced with Martin Seligman's (1999), which allowed the appearance of new concepts explaining the optimal functioning and the positive human development. Positive psychology is focus on the interactions between individuals and their contexts, and how these interactions contribute to positive functioning (Diener, 2009). From positive psychology movement, emerged the positive organizational behaviour (POB). Some positive concepts, in organizational behaviour, include creativity, well-being, optimism, emotional intelligence, self-efficacy and which can contribute for the organizational outcomes. The aim of POB is to improve the performance, well-being and organizational competition by focusing on the strengths of human-being (Linley, Joseph, Maltby, Harrigton, & Wood, 2009).

The positive psychology has turned the work in a radical view. The best moments in life are not inactive or relaxed, instead those moments occur when a person's mind is pushed to the limit (Csikszentmihalyi, 1990). Along with this, one of the central constructs of positive psychology is the "*flow*" or optimal experience (Csikszentmihalyi, 1990; Fullagar & Kelloway, 2009). This concept has been gaining interest inside occupational health psychology (Csikszentmihalyi & LeFevre, 1989; Demerouti, 2006; Fullagar & Kelloway, 2009; Nielsen & Cleal, 2010; Salanova, Bakker, & Llorens, 2006).

The flow was defined by Mihalyi Csikszentmihalyi (1990) as a "state in which people are so involved in an activity that nothing else seems to matter; the experience itself is so enjoyable that will do it even at great cost". Furthermore, the flow has been defined by Nakamura & Csikszentmihalyi (2002), as a dynamic state in which individuals work at full capacity, so the flow can be experienced in different activities, regardless of culture.

The universal precondition to this concept is a transient state in which the individuals balance between the challenge (i.e. the opportunity to act), and the skills (i.e. the person's capacities to act) (Csikszentmihalyi & Csikszentmihalyi, 1988; Csikszentmihalyi & LeFevre, 1989) , while enjoying the moment (Demerouti, 2006). In order to happen, the activity must have clear rules and an unambiguous feedback. This is particularly important, because it is difficult to immerse or enjoy an activity where an individual does not know what needs to be done. Another dimension of the flow is the concentration, defined by a high degree of involvement. The optimal experience depends on the ability to control what happens in every moment, and to do so the individuals have

to be completely focused on the task. The sense of control is a feature of flow experience and is defined by the individual's ability to control one's action. Flow experience is also characterized by the loss of self-consciousness and a different perception of the time. This happens when the consciousness is fully active and the person change to an activity state. Underlying these concepts, the appearance of action and awareness are an important dimension in flow. To complete the framework of flow, and when all these antecedents described above are present, the experience seamlessly unfolds at the moment. The experience is perceived as autotelic - a key element of flow. The individuals complete the activity because it is rewarding, and their primordial aim is experiencing the activity. The main difference is the focus; when the experience is autotelic, the focus is not in the consequence. The optimal experience is the end as itself and individuals are intrinsically motivated to do so (Csikszentmihalyi & Csikszentmihalyi, 1988; Csikszentmihalyi, 1990; Fullagar & Kelloway, 2009; Moneta, 2012).

Moneta (2012) described flow as a "set of interrelated constructs and propositions that describe systematically the relationships among the constructs with the purpose of explaining and predicting a range of measurable outcomes". Experiencing flow, is in itself positive and induces a sense of autonomy and competences, positive affect, self-efficacy and an intense desire to repeat the experience (Nakamura & Csikszentmihalyi, 2002). Flow emerges in a particular moment and intensity (Fullagar & Kelloway, 2009), and it is probably easier to recognize than to define properly.

Flow involves the development of skills and complexity of the self, and this can be found in activities like in work. Many studies have shown that flow is an important component and it is often found in work (Csikszentmihalyi & LeFevre, 1989; Delle Fave & Massimini, 2003; Engeser & Baumann, 2014; Salanova et al., 2006). The work, present in everyday life, creates challenging situations that require greater skills and higher performance, so it is the perfect context for individuals to have positive experiences in the job.

Flow at work can be related to classic Job Characteristics Model (Bakker, 2005; Demerouti, 2006; Fullagar & Kelloway, 2009; Salanova et al., 2006), developed by Hackman & Oldham (1975), which recognizes five dimensions as the main characteristics in the job: skill variety, task identity, task significance, autonomy and job feedback. As consequence of higher scores in these dimensions, internal work

motivation, the satisfaction and the performance increases in work environment (Hackman & Oldham, 1975; Pinder, 1998). An employee will experience *motivation* when a job generates these three critical states (Pinder, 1998). The job should be designed to emerge feelings/experiences such as personal responsibility for the outcomes; employees must feel autonomy to determine the procedures and be responsible for the results about the work they do. Meaningfulness independently of the type of the work - to arouse motivation, employees must feel that their works matter, the work must be important and demanding. Finally the knowledge of results; the degree of employees understanding their performing through feedback (Hackman & Oldham, 1975; Pinder, 1998).

Demerouti (2006) found, in 113 employees of 10 different organizations, that motivating job characteristics (i.e. skill variety, task identity, task significance, autonomy and job feedback) were related with flow. Salanova et al. (2006), in their longitudinal study with school teachers, showed that a combination of social support, innovation and clear rules were related to flow over time. In another study, included job characteristic model revealed that autonomy and skill variety, in architectural students, that works on creative projects, were correlated to flow (Fullagar & Kelloway, 2009). Bakker (2005) showed that autonomy, performance feedback, social support and supervisory had a positive influence on the balance between challenges and skills, variables that characterize the experience of flow. Employees with demands that match their professional skills are more likely to experience flow (Bakker, 2005). The job characteristics can have a significant impact on work well-being, for instance, can be useful to improve the motivation and work engagement (Bakker & Demerouti, 2007; Demerouti, 2006).

The work motivation is not simple to define because it is a concept that includes many aspects (Pinder, 1998). Thus, the classic theories about motivation involve a range of dynamic factors associated with work, such as work organization (Hackman & Oldham, 1975), achievement (McClelland, 1990), performance (Locke & Latham, 1990) and involvement (Allen & Meyer, 1996).

Motivation has an important impact on work and have a critical influence to experience flow. The optimal experience appears when the activity is intrinsically rewarding, and people who are motivated want to continue "even at a great cost"

(Csikszentmihalyi, 1990). According to Bakker (2005), "when flow is applied to the work situation it can be defined as a short-term peak experience that is characterized by absorption, work enjoyment and intrinsic work motivation". Work motivation maintains the interest and the inherent enjoyment in work activities, which suggests that they experience flow. To create a job environment that facilitates the motivation is important to have in concern job demands as well as job resources (Bakker & Demerouti, 2007).

Work is enhanced by flow, which emphasizes the importance for individuals to have positive experiences while they are working (Csikszentmihalyi & LeFevre, 1989; Nielsen & Cleal, 2010). The purpose of this study is to give more insights of employee well-being based on a specific and innovative organizational environment. Startups context were selected in this investigation because of their work culture and entrepreneurs that build these organizations. The entrepreneurship is being an economic essential source, and not only has inspired others, but also is a source of job creation and market innovation (Baum, Frese, & Baron, 2007; Hoffman & Casnocha, 2012). Whatever the label and wherever the context, innovation is the main focus for entrepreneurship (Bessant & Tidd, 2011). The reason to study entrepreneurs, is the fact that "entrepreneurship is fundamental personal" (Baum et al., 2007, pp. 1). When everyone avoids the uncertainty, the entrepreneurs risk on an innovative idea to create value for their costumers and workers (Bessant & Tidd, 2011; Furr & Dyer, 2014). It takes passion, energy, human vision and work to conceive and convert ideas to successful business (Baum et al., 2007; Hoffman & Casnocha, 2012). Motivation and cognition are essential to bring the productive actions are directed towards entrepreneurial goals through growth that results in high performance of Startups (Baum et al., 2007).

To explain the relevance of studies in this context, others characteristics and motivational factors sustained a framework to explain the entrepreneur's potential. According to Hoffman and Casnocha (2012), "creation is the essence of entrepreneurship" and is usually referred to the entrepreneurial vision. Preparing successful business requires a purpose and looking for the present facts and project the future possibilities (Baum et al., 2007). Agility and flexibility are some of the entrepreneur characteristics because the business world is changing every day and never knows what is happening next, so changing and creating an iterative plan is essential (Hoffman & Casnocha, 2012). To maintain the competitive advantage, the teams of entrepreneurs will be faster to create and develop the product or the service and drive it

to actions (Blumberg, 2013). They are proactive and ambitious to achieve their vision (Baum et al., 2007; Blumberg, 2013). At last, passion for their work is a significant element for business success, is not in an emotional sense, is about definition the priorities and sacrifice other chooses to work and build the vision. Is about self-interest to work and love for what they do (Baum et al., 2007).

The founding teams change during the entrepreneurship process, that involves a variety of activities and behaviours performed over an extend period of time (Blumberg, 2013; Ries, 2012). In the early organizational stage, the entrepreneurs have to be able to take a larger number of tasks, who often overtake their competencies and knowledge (Blumberg, 2013). Their work involves disruptive changes, so the procedures and the management of Startups are the new method for managing innovation (Baum et al., 2007; Furr & Dyer, 2014). According to Ries (2012) a startup is "a human institution designed to create new products and services under conditions of extreme uncertainty". Taking this into account, the entrepreneurs are prepared to assume risks in finding new solutions that costumers want to pay, as fast as possible (Furr & Dyer, 2014; Ries, 2012). Inside of much uncertainty, their decisions and actions are the core of their success and the intellect property are the competitive advantage (Baum et al., 2007).

Aims

The aim of the current study was to explore how flow is operationalized under the uncertainty and pressure that characterize startups. This study investigated the quality of experience in entrepreneurs during a week in relation to external – daily activities, companionship and context - and internal dimensions of experience (e.g. positive and negative affect, motivation, concentration, challenges and skills). We focused on daily activities, distinguished productive activities as work related activities, and non-productive activities as non-work related.

Additionally, we examined the variations of states that characterized the daily experience. Considering the characteristics of the population under study, we examined the quality of subjective experience, in terms of internal dimensions (defined above), in three types fluctuation of experiential states - control, flow and anxiety.

Finally, we examined the job characteristics, identified by Hackman & Oldham (1975), and work motivation (Ferreira, Diogo, Ferreira, & Valente, 2006) on startups, and the relation between these variables and internal dimensions of flow state.

Method

Participants

Participants were recruited in Startup Braga, which is an innovation hub, created to support the developing entrepreneurial projects to international markets. The participants were employed in several startups, which are distributed by tertiary and quaternary economic sectors, based on service and product business (INE, 2017). The study was presented in 6 startups, 4 of which agreed to participate in the study.

The initial sample consisted on 16 participants, but two of them were excluded due to not having the minimum of 15 responses required along one week. The final sample included 14 participants, 9 males (64,3%) and 5 females (35,7%). Participant's ranged from 24 to 34 years old, with an average of 28.71 (SD=2.84). All participants had a university degree, 71.4% with engineering background, 21.4% related with human and social sciences background and just one participant (7.1%) with visual art background.

The majority of the sample had another professional experience before work in startups (78.6%). Towards currently job positions, the sample included 42.9% developers, 35.7% administrative, 14.3% quality managers and 7.1% commercial position. Organization tenure was 12.79 months (SD=13.48) and all participants were working full time.

Measures

Job Diagnostic Survey (JDS). To assess the job characteristics, the Job Diagnostic Survey (Hackman & Oldham, 1975; Portuguese version by Almeida et al. 2009) was used. This version is based on the original scale, according to the model of Hackman & Oldham (1975). This scale includes 15 items, three items per characteristic (skill variety, task identity, task significance, autonomy and job feedback) that measures job characteristics. Items are divided into two sections, which of each has different answer formats and are rated on a 7-point-Likert scale. The Croanbach's α-coefficients of internal consistency were .45 for skill variety, .70 for task identity, .66 task significance, .66 for autonomy and .33 for job feedback.

Escala Multi-Fatorial de Motivação no Trabalho (Multi-Moti). To assess the work motivation, Portuguese scale developed by Ferreira, Diogo, Ferreira, & Valente (2006) was used. It contains 28 self-report items distributed by four subscales (work

organization, performance, involvement and achievement) rated on a 5-point Likert scale ranging from 1 (*completely disagree*) to 5 (*completely agree*). Higher scores for each sub-scale correspond to higher ability in the dimension assessed. The sub-scales allow to recognize the different approaches developed by classic theories (Allen & Meyer, 1996; Hackman & Oldham, 1975; Locke & Latham, 1990; McClelland, 1990). Cronbach's α-coefficients for work organization, performance, achievement and involvement are .84, .78, .77 and .72, respectively.

Experience Sampling Method.

The experience sampling methodology (ESM) was used to capture various components of daily life and this considered a valid method to investigate the dynamic daily events. The ESM has ecological validity which minimizes the recall bias of the self-report measures (Baxter & Hunton, 2011; Csikszentmihalyi & Csikszentmihalyi, 1988; Moneta, 2012; Scollon, Kim-prieto, & Diener, 2003). Participants were asked to respond repeatedly over time and record their attitudes, behaviours and experiences into the real life.

The ESM assesses a lot of dimensions of one's experience, moment by moment, such as affective, motivational and cognitive components (Csikszentmihalyi & Csikszentmihalyi, 1988). In this study, participants received a phone message that were randomly programmed to be sent 8 times per day between 8 a.m. to 23 p.m. over one week, and were presented within the minimum time lapse of 30 min. The signal-contingent design was adopted on this study, which is recommended when the focus of a study are behaviours that occur during the day, because the signal is unpredictable (Scollon et al., 2003). Participants had a link for the experience sampling form (ESF), the questionnaire containing open-ended items that allowed assessing the activities, physical and social contexts, as well as Likert-type items that indicated characteristics of experience (e.g., cognitive, motivational, affective). In order to avoid the memory bias due to retrospective recall, the responses that were completed more than 20 minutes after the phone message were discarded from analysis (Conner Christensen, Feldman Barrett, Bliss-moreau, Lebo, & Kaschub, 2003; Hektner, Schmidt, & Csikszentmihalyi, 2007). To collect the ESF, a Typeform was used, through a web-based platform for collecting and sharing information.

Variables related to the Momentary Subjective Experience

In the current study, the variables related to momentary subjective experience used were developed based on the ESF. The variables used, in open items, were the context, the company and the main activity participants were involved in during one full week. Furthermore, person-level characteristics were asked, in a 7-point Likert-scale, focusing in the experience and some dimensions of flow.

Affect. Ten items formed the *Positive Affect* (PA) scale (Cronbach's α= .90) – *happy, strong, joyful, sociable, active, content, free, well-disposed, relaxed and satisfied.* Higher levels of PA represent positive and active state. Nine items formed the *Negative Affect* (NA) scale (Cronbach's α= .86) - *apathetic, lonely, anxious, angry, sleepy, bored, sad, tired and irritated.* This means that higher levels of NA represent a state of being displeasure.

Motivation. Motivation was assessed with the following reversed item: *"Would you rather be doing something else?".* Higher scores represent more motivation to be in the current activity, lower scores represent desire to abandon the current activity.

Importance of the activity. The importance of the activity was measured through two items (*"Was there something important in the activity you were doing?"*, *"Was the activity important to any of your life goals?"*). Therefore, higher scores reflect the perception of high significance within an activity, otherwise low scores represent the perception that activities are useless. The scale revealed to have internal consistency, with alpha coefficient of .77.

Concentration. To assess the involvement in the activity one item of ESM was used (*"Were you very concentrated?"*). This item reflects the level of individual's concentration and involvement in the activity. Higher scores indicate the individual perception of being extremely concentrated in the moment of assessment.

Perceived control. The momentary perception of control was based on the score *"Did you feel in control of the situation?".* Higher scores represent high levels of control over the activity.

Daily activities, companionship and contexts. At the moment of each beep,

participants registered the company they were with and the main activity they were involved in, in response to the open questions *"Who are you with?"* and *"What are you doing?"*, respectively. The same happens with contexts, used the open question *"Where are you?"*. These open questions represent optimal opportunities to study in focus the daily life of sample, as the same as the affective, motivational and cognitive dimensions of experience. The open responses were recoded into different categories, based on previous studies developed by research group, the main categories were used in the present study. All moments of the week related to activities, companionships, and contexts were coded (n_{beeps}=476) using two raters. Cohen's kappa coefficient was used to measure inter-rater agreement, and high values were obtained (Activities: Kappa= .92, $p < .001$; Company: Kappa= .95, $p < .001$; Context: Kappa= .95, $p < .001$). Codes without agreement were discussed and the principal researcher (coordinator) decided according to defined rules for coding.

Optimal experience/ flow.

To start define flow experience is frequently used the balance between higher competencies and skills (Csikszentmihalyi, 1990; Csikszentmihalyi & LeFevre, 1989; Hektner et al., 2007). In this study, it was taking account the challenge and skills separately, in order to described better the experience during a week and one typical approach using the model of eight channels (Hektner et al., 2007).

Challenges. To assess the intensity of challenge in the activity was used the item: *"Was the activity in which you were participating challenging?"*. Higher values represent experiences in which individuals perceive high levels of challenge during the activity, low levels represent the opposite perception.

Skills. Skills were assessed by the item: *"Did you feel that you had the competencies to deal with the activity?"*. Thus, the question reflects the individual perceptions of competencies to do the activity. Higher levels characterize higher competencies to deal with the situation at the moment of assessment.

Flow channel. Flow channel was based on Experience Fluctuation Model that provides operationalization of challenge and skills balance into eight channels (i.e. arousal, anxiety, control, flow, relaxation, apathy), that represents flow and non-flow states (Bassi & Delle Fave, 2012a, 2012b; Hektner et al., 2007; Massimini,

Csikszentmihalyi, & Carli, 1987; Moneta, 2012). To define EFM channels was used z-scores of challenge and skills, converted into arctangent functions, that represents the intensity of relationship variables an angular model (Inkinen et al., 2014). The eight 45º sectors corresponding to EFM channels are represented in Table 1.

Table 1

Calculation of Channels

Functions	Description	Quadrant	Channels	
ACTO(*Challenge/Skills*)	*If skill>0 and challenge >0*	1st	22,6º-67,5º	Flow
			67,6º-112,5º	Arousal
ACTO(*Challenge/Skills*)	*If skill<0 and challenge >0*	2nd	112,6º-157,5º	Anxiety
			157,5º-202,5º	Worry
ACTO(*Challenge/Skills*) +180º	*If Skill<0 and challenge <0*	3rd	202,6º-247,5º	Apathy
			247,6º-292,5º	Boredom
ACTO(*Challenge/Skills*) +180º	*If skill>0 and challenge <0*	4th	292,6º-337,5º	Relaxation
			337,6º-22,5º	Control
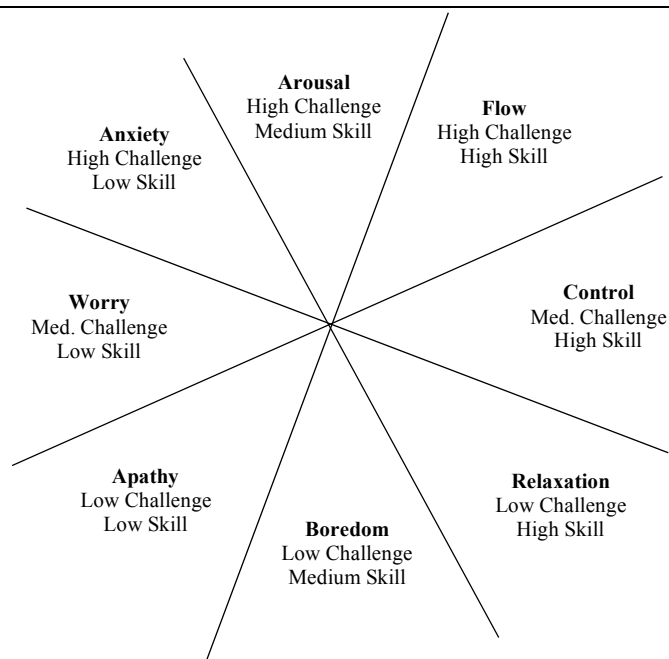
Figure 1. Visual representation of eight channels

Procedure

The present study used a purposive sampling as a sampling technique, through the establishment of contact with the startups, presentation of the study and request for collaboration. This procedure was organised by three phases: briefing, evaluation week and, finally, debriefing (Freire, Gomes, & Fonte, 2017).

So, in an initial phase, the study aims were presented at the startups' offices, as well as the study procedure and the importance of their collaboration. Written consent forms were signed by every participant. Participants who accepted to participate were later contacted to schedule a meeting. During this meeting, participants filled a Sociodemographic Questionnaire and self-report instruments – JDS and Multi-Moti Scale. This meeting lasted about 15 minutes. Afterwards, in the evaluation week, participants were assessed in real time measure with ESM. Participants filled this questionnaire every day, during one week, which took 1-2 minutes to fill out. The participants received a message in their mobile phone to complete the ESF on an online format. Each participant had their private link, in order to ensure the confidentiality of their responses. The debriefing was conducted at the end of the evaluation week. In this phase, participants were recalled and asked if it was a normal week (e.g., if the study disrupted their daily routine or if they responded in a rigorous form). The anonymity and confidentiality of the participants was always guaranteed, participants were able to refuse or interrupt their participation on the study at any moment.

Results

For the statistical analyses, the IBM SPSS Statistics 24.00 (IBM Corp. Released, 2016) software package was used. Firstly, skewness and kurtosis values revealed a deviation from normality for all the study variables. Multivariate Analysis of Variance (MANOVA) was performed, at beep-level, to test the differences in internal dimensions according to productive and non-productive activities. Furthermore, Z-scores were used, in order, to describe results in the figures related to previous analyses Additionally, One-Way ANOVA and Gabriel Post-hoc test were conducted, at beep-level in order to study the differences in function of three fluctuation states and internal dimensions of experience. Although there was a deviation of normality, this last option was made considering that there was no alteration of the results between this test and the non-parametric test (Field, 2009). Finally, the correlations between self-reported measures and internal dimensions in flow situations were determined through the Spearman Test.

Quality of daily experience

To describe the subjective experience of daily life, the company, contexts and activities performed during the week were observed (Table 2). The final sample (N=14) and all moments of the week (n_{beeps}= 476) were considered. It is important to note that most of the time spent in activities was working on the job and circled by work colleagues.

Table 2

Responses and frequency among Activities, Companionship and Contexts during a week.

		N beeps	% beeps	Description of frequency
Activities	Productive	239	50.2%	
	Leisure	62	13.0%	
	Maintenance	118	24.8%	
	Socialization	36	7.6%	
	Other activities (i.e. help others)	21	4.4%	
Companionship	Family	47	9.9%	
	Friends	49	10.3%	
	Work colleagues	235	49.4%	
	Alone	127	26.7%	
	Others	9	1.9%	
Contexts	Work	241	50.6%	
	Home	152	31.9%	
	Public places	64	13.4%	
	Others	17	3.6%	

The descriptive statistic, on Table 3, shows the internal dimensions of the experience. As can be seen, internal dimensions were focused in productive and non-productive activities (i.e. the sum of non-work related activities) and total of the week.

Regarding MANOVA results, there were significant multivariate differences between productive activities and non-productive activities, $\lambda = .60$, $F(8,467) = 38.59$, $p < .001$. Univariate results showed significant differences between productive and non-productive activities regarding positive affect, $F(1,474) = 15.27$, $p < .001$, negative affect, $F(1,474) = 4.77$, $p = .03$, motivation, $F(1,474) = 6.16$, $p = .01$, importance of activity, $F(1,474) = 154.26$, $p < .001$, perceived control, $F(1,474) = 25.21$, $p < .001$, concentration, $F(1,474) = 24.40$, $p < .001$, challenges, $F(1,474) = 148.43$, $p < .001$ and skills, $F(1,474) = 15.74$, $p < .001$. Non-productive activities showed more positive affect, motivation, perceived control and skills than productive activities, whilst productive activities presented more negative affect, importance of activity, concentration and challenges.

Table 3

Means, Standard Deviations among Internal Variables of Experience during a week
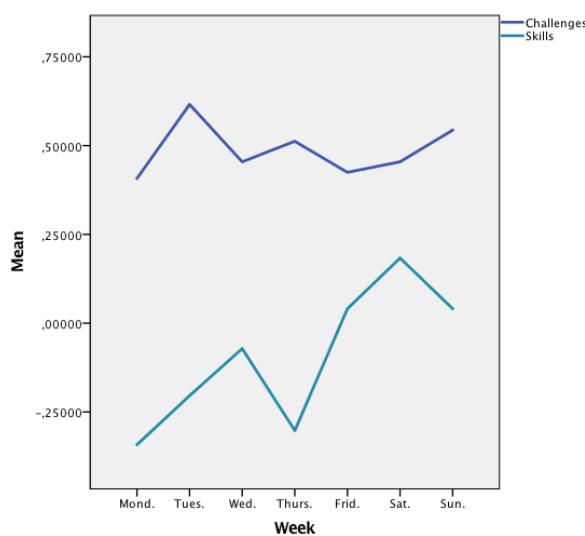
	Productive Activities	Non-productive Activities	Total of the week
N_{beeps}	239	237	476
% beeps	50.2%	49,8%	100%
	M (SD)	*M* (SD)	*M* (SD)
1. PA	4.24 (.86)	4.55 (.87)	4.39 (.87)
2. NA	2.49 (.96)	2.29 (1.00)	2.39 (.99)
3. Importance of activity	4.08 (1.54)	2.28 (1.62)	3.18 (1.82)
4. Perceived control	4.66 (1.41)	5.32 (1.44)	4.99 (1.46)
5. Concentration	4.94 (1.39)	4.21 (1.76)	4.57 (1.62)
6. Motivation	4.87 (2.08)	5.34 (2.10)	5.10 (2.10)
7. Challenges	4.06 (1.65)	2.24 (1.61)	3.15 (1.87)
8. Skills	5.58 (1.03)	6.00 (1.26)	5.79 (1.17)

In order to analyse in a deep way, the experience along the week, we focusing on the total week results. The positive and negative affect were taken into account, in order to explore the differences on productive activities between days. Participants described the productive experience as more negative overall. In addition, Thursday represented the lower levels of positive affect. As shown on Figure 2, as the weekend began the positive affect increased, staying above the average.
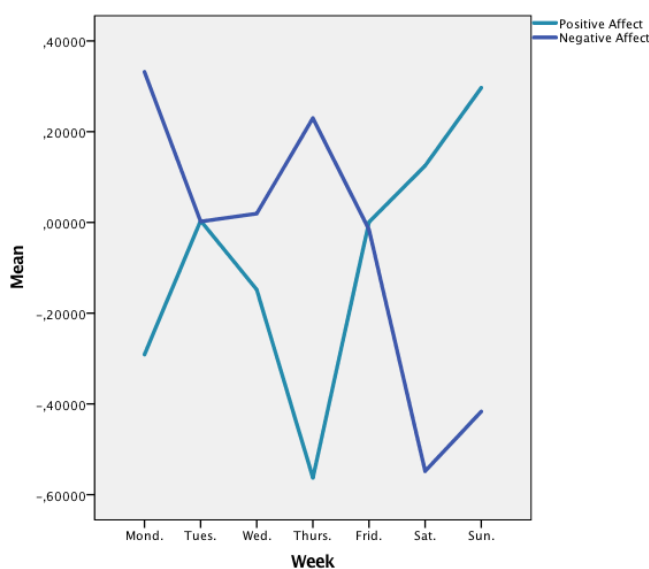
Figure 2. Comparison of Z-scores in terms of PA and NA over the week on Productive Activities

During the week, participants perceived more challenges than skills on productive activities. In addition, on Monday and Thursday the participants perceived lower levels of skills.

Figure 3. Comparison of Z-scores in terms of Challenges and Skills over the week on Productive Activities

Along the total of 476 moments answered during the week, participants spent more time in control (30.0%) than on any other channel of experience, 128 (26.9%) in relaxation, 74 (15,5%) in anxiety, 30 (6.3%) moments in flow, 24 (5.0%) in arousal, 31 (6.5%) in apathy, 44 (9.2%) in boredom and just 2 (.4%) in worry.

As shown in Table 4, were taken into account z-scores for each variable in flow, control and anxiety channels. Concentration, motivation, challenges and skills were more characteristics of activities in flow channel. Otherwise, negative affect and importance of activity were more characterized in anxiety channel. At last, positive affect was more considered in activities in control channel, while perceived control was in both flow and control channels.

Table 4

Means and Standard Deviations (SD) in Flow, Control and Anxiety channel

	Flow Channel		Control Channel		Anxiety Channel	
	(*n*=30)		(*n*=143)		(*n*=74)	
	M	(SD)	*M*	(SD)	*M*	(SD)
1. PA	.09	(1.21)	.20	(.97)	-.27	(.94)
2. NA	-.26	(.88)	-.23	(.86)	.37	(1.00)
3. Importance of activity	.02	(1.29)	.10	(1.00)	.51	(.66)
4. Perceived control	.17	(1.06)	.11	(.84)	-.48	(.79)
5. Concentration	.51	(1.08)	.26	(.83)	.26	(.74)
6. Motivation	.68	(.54)	.16	(.93)	-.30	(1.00)
7. Challenges	1.33	(.64)	.16	(1.01)	1.03	(.40)
8. Skills	1.04	(.00)	.18	(.00)	-.90	(.52)

Note: Values represent average Z-Scores for each measure.

To investigate the differences between internal dimensions of experience in function of the three channels was used One-way ANOVA. The results showed a significant difference on positive affect, $F_{(2, 244)} = 5.46$, $p = .005$, negative affect, $F_{(2, 244)} = 11.35$, $p < .001$, motivation, $F_{(2, 244)} = 13.32$, $p < .001$, importance of activity,

F (2, 244) = 7.17, p = .001, perceived control, F (2, 244) = 12.95, p < .001, challenges, F (2, 244) = 41.36, p < .001 and skills, F (2, 244) = 609.31, p < .001. Moreover, differences on concentration (p > .05) were not observed.

The Gabriel Post-hoc Test revealed that control channel had more positive affect than anxiety channel. Furthermore, negative affect was higher in anxiety channel than flow channel and control channel. Regarding motivation, flow channel presented higher levels than control channel and anxiety channel, as well as, control channel in comparison with anxiety channel. Moreover, anxiety channel revealed higher values of importance of activity in comparison with control channel. Regarding perceived control was significantly less in anxiety channel than flow channel and control channel. Concerning to challenges revealed higher values in flow channel and anxiety channel, in comparison with control channel. Furthermore, regarding skills, flow channel presented higher levels than control and anxiety channel, as well as, control channel in comparison with anxiety.

In order to analyse in a deep way the flow situations, was analyse the means and standard deviations between internal dimensions of experience and the two different types of activities – Table 5.

Table 5

Flow: Means and Standard Deviations among Productive and Non- Productive Activities

	Productive Activities (*n*=18)	Non-productive Activities (*n*=12)
	M (SD)	*M* (SD)
1. PA	4.42 (1.16)	4.55 (.91)
2. NA	2.12 (.86)	2.16 (.90)
3. Importance of activity	4.97 (1.83)	1.13 (.43)
4. Perceived control	4.89 (1.75)	5.75 (1.06)
5. Concentration	5.61 (1.65)	5.08 (1.93)
6. Motivation	6.44 (1.15)	6.67 (1.16)
7. Challenge	5.56 (1.29)	5.75 (1.06)
8. Skills	7.00 (.00)	7.00 (.00)

Flow Experience, Work Motivation and Job Characteristics

In order to describe the self-report measures, descriptive statistics were run on the total sample (Table 6).

Table 6

Means and Standard Deviations (SD) among Self-Report Measures

		M	(SD)
Motivation	Work Organization	3.90	.61
	Performance	3.79	.58
	Achievement	3.99	.53
	Involvement	3.68	.41
Job Characteristics	Autonomy	5.52	.68
	Task Identity	5.38	.87
	Skill Variety	5.59	1.19
	Task Significance	5.12	1.28
	Job Feedback	5.14	.98

Additionally, flow situation was analysed at personal-level (*n*=12) in order to associate the sub-scales of work motivation and job characteristics between internal dimensions of experience (i.e. motivation, PA, concentration and perceived control). As a result of sample was considered the non-parametric test of Spearman. A positive correlation was revealed between motivation and performance, $r_s = .682$, $p = .02$. So, higher levels of motivation were associated with higher levels of performance in work. There were no other significant correlations between self-report measures and internal dimensions of experience ($p > .05$).

Discussion

The present study aimed to explore the quality of work experience in Startups, based on a framework assumption of flow theory. The main goal was to explore the internal and external dimensions of experience and characteristics that may be related to the flow experience at work activities.

In general, productive activities were the major activity present along the week. Considering the definition of flow, balance of high challenges and high skills as antecedents of flow, and regarding the optimal experience characterised by intrinsically motivation, it was expected that productive activities would be associated with higher levels of motivation and positive affect (Csikszentmihalyi, 1990; Csikszentmihalyi & Csikszentmihalyi, 1988; Llorens, Salanova, & Rodríguez, 2013; Moneta, 2012; Nakamura & Csikszentmihalyi, 2002; Salanova et al., 2006). However, positive affect and motivation were not associated with productive activities and negative affect was prevalent during the work week. According to Bandura (2001), people's shared beliefs can influence the way that experience is perceived (Salanova, Rodríguez-sánchez, Schaufeli, & Cifre, 2014). This can be explained by the *paradox of work,* when people associate positive activations (e.g. positive affect, motivation) to other activities instead of work (Bassi & Fave, 2012; Engeser & Baumann, 2014; Hektner et al., 2007). This represents a cultural stigma when people consider work as an obligation activity that masks the positive experience (Csikszentmihalyi & LeFevre, 1989). In fact, the individuals judge their feelings and desires based on social conventions (Bassi & Delle Fave, 2012a; Csikszentmihalyi & LeFevre, 1989; Engeser & Baumann, 2014).

Moreover, the fact that participants had higher levels of concentration, challenges and perceived the productive activities as relevant for their goals, shows the importance of work activities on life goals. However, the control dimension of experience was perceived with lower levels in productive activities in comparison with non-productive activities. Despite this, when flow is inferred through the flow model, participants spend more time in control channel (143/476 moments) than on any other channel. This finding was quite surprising and might be explained by methodological considerations, given that different items were used to assess such a complex dimension. On the one hand, the sense of control was assessed by one item of the Experience Sampling Form (*"Did you fell in control?"*), on the other hand, to categorize the control channel two different questions

were used (*"Was the activity in which you were participating challenging?"* and *"Did you feel the you had the necessary competencies?"*).

Considering the purpose of this study, three channels were selected for analyses. The control channel was the predominant channel on this sample daily life. This finding can be due to the lack of challenge of participant's tasks, or due to the fact that participants actually had high skills to perform the tasks, which goes in line with flow concept (Csikszentmihalyi, 1990). This fact may also justify the few moments of flow registered by participants. Participants considered more activity importance on the anxiety channel in comparison with the control channel, which goes in line with our option of choosing the anxiety channel because of the individuality responsibilities of this population (Bassi & Delle Fave, 2012a; Delle Fave & Massimini, 2003; Salanova et al., 2006).

In line with the literature, it was observed that flow channel had higher levels of motivation, challenges and personal skills in comparison with the other two channels. Furthermore, higher levels of control over the activity were found in the control and flow channels in comparison with the anxiety channel (Csikszentmihalyi, 1990; Csikszentmihalyi & Csikszentmihalyi, 1988; Massimini et al., 1987; Moneta, 2012; Nakamura & Csikszentmihalyi, 2002). Considering the conceptual framework of this study, it would be expected to observe higher levels of positive emotions on flow states (Csikszentmihalyi & LeFevre, 1989; Fullagar & Kelloway, 2009; Massimini et al., 1987). However, there were not found significant differences in positive affect when comparing flow with the other two channels. No surprisingly, control channel had higher levels of positive affect in comparison with anxiety channel, considering that anxiety is associated with negative emotions (Watson, Clark, & Tellegen, 1988). For this same reason, the flow channel should also revealed more significantly positive emotions in comparison with the anxiety channel which was not verified. This may be due to methodological reasons, more specifically, due to the reduced sample size, which may have limited the capture of flow moments and consequently prevent the findings of being extrapolated.

Regarding self-report and daily life measures, it is important to note that higher levels of real time motivation were associated with higher levels of performance on a motivation self-report source. These results are consistent with the conceptual framework of this study, considering that optimal experience is characterized by the wish to do the activity, as so, allows people to feel a sense of competence and satisfaction in the activity

(Bakker, 2005; Bassi & Delle Fave, 2012a; Csikszentmihalyi & LeFevre, 1989; Demerouti, 2006; Ryan & Deci, 2000).

Job characteristics did not associate with internal dimensions of flow state. Thus, results were not expected considering the theoretical framework of this study (Bakker, 2005; Demerouti, 2006; Fullagar & Kelloway, 2009; Salanova et al., 2006). This may be due to the combined use of retrospective measures - which account the information in another context and in a different time line (Reis, 2011)- and real time ESM approaches, which might have diffuse the results. The cognitive operations that people use to real-time reports and memory-based reports are different (Baxter & Hunton, 2011; Robinson & Clore, 2002), and using both alternate methods might result on an "inaccurate estimation" (Robinson & Clore, 2002).

Limitations and future directions

The main limitation of this study regards to the sample size, which included only 14 participants, and even though the methodology allowed the extension of the analysis to a beep level, sophisticated multilevel analyses were not possible. Furthermore, the presented results cannot be considered representative of Startups' population, and thereby generalizations should not be made. Secondly, the sample was compose mainly of men, for what female gender was not representative.

In spite of these limitations, it would be important that future studies would aim at replicating the study, in order to investigate, in a deeper way, this specific population. Additionally, it would be interesting to develop a direct measure of flow to be included on the Experience Sampling Form, in order to measure the construct directly. Moreover, further analysis should explore the consistency of what workers are doing at work and what really like to do during the work, and perceive the intrinsic and extrinsic nature of work. Weiss, Nicholas and Daus (1999) found that positive experience in work predicted job satisfaction, so for future research, job satisfaction on ESF should be considered. This will allow to check if the positive mood (i.e. positive affect, motivation) and job satisfaction will be or not related. Finally, due to the characteristics of the sample, it would be interesting to understand *collective flow* experience in each startup while performing the tasks (Salanova et al., 2014).

Conclusion and implications for practice

This study represents a step forward in the research of flow because it analyses an innovative sample. Entrepreneurs represent a unique opportunity to test optimal experience in a singular context. Therefore, interesting findings can be explored and used for current and future entrepreneurs

The present findings of this study have theoretical and practical implications.

The impact of context on behaviour is fundamental to perceive the core elements that affects the performance of a team. These elements, such as positive affect, concentration, motivation, are important to understand the experience flow in work context. In fact, using this daily life method allowed to study this population of professionals along with their real-world and so understanding in a better way practical implications of daily life in subjective experience.

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