

# CHAPTER 14

## UNDERSTANDING FLOW AMONG ACADEMICIANS

Avina J. Mendonca, Nidhi Mishra  
and Sanket S. Dash

### ABSTRACT

*The chapter studies the flow experience among academicians and the determinants of flow initiation and development. The academicians' studied, have both research and teaching duties. The data for the study is drawn from 12 interviews conducted with academicians in India, with science, social science, and statistics as their fields of study. The study finds that different psychological needs can lead to flow experiences. It is proposed that the relationship between flow and psychological needs is influenced by personality traits (openness to experience and conscientiousness), which are reflected in day-day behavior (spontaneity and structuring). Interaction between humans (either students or collaborators) induced and strengthened flow-like feelings and emotional well-being, subject to certain conditions. Problem solving was found to be the key determinant of flow. Overall flow was found to be higher among research-oriented people working in science.*

**Keywords:** Flow, emotion, teaching, research, interaction

## INTRODUCTION

What is it to live and be involved with a moment completely and, forget the time? Almost every human being experiences this state at least few times in her life. Common examples of people who attain this state frequently are artists, players, readers, etc. In the workplace, such experiences of completely getting involved with the work have been studied by scholars by exploring concepts such as flow (Csikszentmihalyi, 1975; Csikszentmihalyi & Csikszentmihalyi, 1991), intrinsic motivation (Abuhamdeh & Csikszentmihalyi, 2009), and positive emotions (Frederick, 2001). Present study would explore flow which is the combination of certain conditions and positive emotions, and lead to a subjective experience. Understanding flow would also be a new way of looking at positive emotions under the positive organizational behavior traditions.

Flow has been described as a temporary and subjective experience, and personal perception plays a vital role in determining why people continue to perform the same activity over and over (Csikszentmihalyi, 1991; Webster, Trevino, & Ryan, as cited in Kuo & Ho, 2010). The studies of flow have been mostly conducted on people engaged in professions such as music, drama, and sports. The present study tries to understand the flow experiences among academicians. Academicians constitute a good target population for studying flow because they perform two distinguishable activities – research and teaching. Research and teaching differ in terms of parameters like novelty, interaction with others, and tangibility of the effort–output relation. Hence, studying flow among academicians can help us to understand the relative importance of factors in inducing flow. Researching flow among academicians also helps us understand the difference in experiencing flow by the same individual in doing different sets of activities like teaching, research, and administrative works.

### *Defining and Understanding Flow*

Csikszentmihalyi (1975) defined flow as “the holistic sensation that people feel when they act with total involvement” (p. 4). Nakamura and Csikszentmihalyi (2002) explained flow as “the subjective experience of engaging just manageable challenges by taking a series of goals, continuously, processing feedback about progress and adjusting action based on this feedback” (p. 90). Experience of flow involved merging of action and

awareness, intense, and focused concentration on the activity involved, loss of reflective self-consciousness, sense of control over one's actions, loss of sense of time, and experiencing the activity as an intrinsic reward in itself (Nakamura & Csikszentmihalyi, 2002).

Flow has been also studied under the label of "optimal experience" (Fullagar & Kelloway, 2009), mainly in the context of leisure, intrinsic motivation, and positive experience (Nakamura & Csikszentmihalyi, 2002). In understanding the quality of experience of particular activity two aspects can be taken in to account. First is the interaction between the person and the environment. If person's skills match with the challenges from the environment, the experience would be positive. Second is to understand the happiness, satisfaction, motivation, strength, positive emotions, and creativity involved with the activity (Csikszentmihalyi & LeFevre, 1989). One can notice that, flow as an experience involves environment-person interactions and affective component which is the outcome of such interactions.

Early models of flow emphasized the balance between challenges and skills (Csikszentmihalyi, 1975). In later years flow has been characterized as consisting of nine component states (Csikszentmihalyi, 1990) namely, challenge-skill balance, merging of action and awareness, clarity of goals, unambiguous feedback concerning progress toward one's goals, concentration on the task at hand, paradox of control, loss of self-consciousness, transformation of time, and autotelic experience. Researchers have identified the necessary conditions of flow. Csikszentmihalyi, Abuhamdeh, and Nakamura (2005) list out the following three essential conditions for flow: clear goals that help structure experience by channelizing attention, clear, and immediate feedback that helps individual to negotiate the continually changing environment demands, and a balance between opportunity and capacity that helps individuals get into a state of absorption.

Flow is also dependent on the activity state. Nielsen and Cleal (2010) studied the predictors of flow at two levels: activity level (such as brainstorming, problem solving, and evaluation) and work environment level (such as role clarity, influence, and cognitive demands). The authors found that actions performed at the activity level such as planning, problem solving, and evaluation predicted transient flow states. However the more stable dispositions associated with the stable job characteristics, such as role clarity, influence, and cognitive demands, did not predict flow at work.

Kuhl (1994), as cited in Keller and Bless (2008), observed greater intensity of flow experiences in action-oriented individuals. Keller and Bless (2008) verified this assumption. The authors suggested that the orientation

towards action and activity focus were “crucial pre-requisites for the experience of flow.”

Flow experience has also been found to be positively related to the achievement motive. Baumann and Scheffer (2011) defined the “intrinsic component of the achievement motive (i.e., need to seek and master difficulty)” as the flow motive and verified a positive association between the flow motive and flow experience in outdoor activities. This suggests that there is a latent and permanent flow motive that is activated under appropriate conditions.

Other researchers have identified different characteristics of flow. Trevino and Webster (1992) identified the characteristics of flow experience as feeling in control, focusing attention on activity, feeling curiosity, and having intrinsic interest. Hoffman and Novak (1996) also identified characteristics such as skill and control, challenge and arousal, focused attention, interactivity, and tele-presence. Hoffman and Novak (1997) modified the constructs of flow experience and presented a model with components: a seamless sequence of responses, intrinsically enjoyable, accompanied by a loss of self-consciousness, and self-reinforcing (Hoffman & Novak, 1997). Hsu and Lu (2004) measured flow based on attributes such as total involvement, enjoyment, control, concentration, and intrinsic interest, while Wu and Chang (2005) divided flow into two categories: enjoyment and time distortion (as cited in Kuo & Ho, 2010).

Flow theory (Csikszentmihalyi, 1990), an extension of flow construct, has been used heuristically in a variety of areas. It has emerged as a means of understanding the ways in which technology, and online sociality specifically, has impacted daily life. It has been applied to the study of online gaming (e.g., Cowley, Charles, Black, & Hickey, 2008; Wan & Chiou, 2006), human-technology interactions (e.g., Chen, 2006; Lu, Zhou, & Wang, 2009), and learning (e.g., Liu, Liao, & Pratt, 2009; Shin, 2006). Flow theory has also been used within the context of higher education (e.g., Steele & Fullagar, 2009, as cited in Latz, 2012). But the focus here has been on students and not on academicians. There are few studies on flow experience among school teachers (e.g., Beard & Hoy, 2010), but there is no study on teachers in post-graduate institutions. Present study aims to fill this gap in literature.

The original conception of flow had hypothesized the skill-challenge match as the necessary pre-requisite for flow. Csikszentmihalyi (1988), as quoted in Engeser and Rheinberg (2008) modified the original skill-challenge fit formulated by Csikszentmihalyi (1975), to exclude the cases where both skills and challenge are low. Current definitions of flow

emphasize both high skills and challenge as necessary pre-requisites for flow. Engeser and Rheinberg (2008) tested the hypothesis in three studies that studied flow among students learning statistics, flow among volunteers playing computer games, and flow among students learning French. The first task was of great importance, the second task was of low importance and the third task was of medium importance. The skill-challenge balance hypothesis was proved only in the low importance task. In the first task, flow was high even when challenge was low. In the medium importance task, the relationship between flow and balance was intermediate between the high important and low important tasks. The study suggested that perceived importance of task was an important predictor of flow. Hence, people could experience flow even when the balance between skills and challenge was absent but the activity was perceived important for either intrinsic or extrinsic reasons.

Flow not only depends on the skill-challenge hypothesis but also on the personality of the individual. Keller and Blomann (2008) found that only people with strong locus of control are likely to experience flow under conditions of balance.

#### *Flow in the Workplace*

The experience of flow has also been frequently reported while engaging in work-related tasks as opposed to leisure activities (Csikszentmihalyi & LeFevre, 1989; Delle Fave & Massimini, 1988). Bakker (2005) in a study on music teachers applied the concept of flow on work situation and defined it as a short-term peak experience at work that is characterized by absorption, work enjoyment and intrinsic work motivation, absorption being referred to being totally immersed in work (Csikszentmihalyi, 1990), enjoyment or happiness as the cognitive and affective outcome of flow experience and, intrinsic work motivation referred to the aim of enjoying the activity itself for its inherent pleasure and satisfaction (Salanova, Bakker, & Llorens, 2006). Demerouti, Bakker, Sonnentag, and Fullagar (2012) state that the absorption and intrinsic motivation aspects of flow led to higher vigor at work and at home, respectively, while the enjoyment aspect of flow led to higher vigor and lower exhaustion at work. Enjoyment was also related to vigor and exhaustion after work, particularly when the employees did not have sufficiently long breaks between two work days.

Bakker (2005) explained that at workplace job resources like autonomy, colleague support, social support, etc. influenced the match between challenges and skill, in turn influencing the flow experience. Additionally,

drawing from emotion contagion theory, Bakker (2005) pointed that, the positive emotions and enjoyment experienced during flow experience spread to other individuals. Salanova et al. (2006) pointed that along with organizational resources, personal resources of individual facilitated work-related flow which in turn influenced the organizational and personal resources.

Sahoo and Das (2012) hypothesized and verified a positive relationship between flow at work and self-efficacy and well-being among managers in IT companies. Fredrickson and Joiner (2002) posited that positive emotions broadened the scope of cognition and attention, creating upward spirals of increased emotional well-being. Flow created enjoyment and positive emotions which contributed to the well-being of the individual at workplace. Salanova et al. (2006) identified it as upward spiral of organizational and personal resources. Hence, experiencing flow was closely related to generating positive emotions and leading to well-being of employees at workplace.

Flow theory has been used as a heuristic framework to better understand processes of teaching and learning within higher education (e.g., Liao, 2006). Bakker's (2005) research on teachers and students within music schools in the Netherlands found a positive relationship between music teachers' flow experiences and the flow experiences of students. The more a teacher experienced flow, the more his or her students experienced flow. More specifically, "teachers' intrinsic work motivation was related to flow experienced by students" (Bakker, p. 38, as cited in Latz, 2012).

The experience of flow is related with general well-being of the workers (Sahoo & Das, 2012; Salanova et al., 2006) at workplace. Bakker (2005) deduced from flow studies that, individuals underwent flow experiences while at work rather than while being in leisure. Hence, experience of flow is also influenced by work and non-work hours in an individual's life. In academics, the demarcation between work and non-work may not be as sharp as in other professions, as academicians do part of their preparation at home, based on availability of time and, convenience. The work load (teaching and research) also varies from day to day. Hence, given the greater permeability of work and non-work life in the case of academicians, flow experiences might be related to better life satisfaction in general.

Latz (2012) in an auto ethnographic study analyzed teaching experience in a community college. Research showed that preparation schedules, student's feedback and solidarity with students affected the flow experience. Also Latz (2012) identified a strong affective component in the whole process.

In addition, a study done by Beard and Hoy (2010) has linked flow to academic optimism. They divided optimism into two categories:

dispositional life optimism and academic optimism. Dispositional life optimism is a general attitude and outlook of expecting the best in the future. Academic optimism is specific to teaching and learning. It consists of constructs like self-efficacy, trust, and academic emphasis. [Beard and Hoy \(2010\)](#) in their study found strong relation between flow and academic optimism.

Above research conducted on flow in the academic context were regarding teaching and teachers' interactions with the students. However, academicians also have research as an important activity, especially in higher education. [Lechuga and Lechuga \(2012\)](#) viewed faculty as learners and research as learning activity. Additionally, [Nakamura and Csikszentmihalyi \(2005\)](#) pointed that teachers with the intension of instilling lifelong learning passion in students were the one who were highly engaged in their profession. Learning is also part of the achievement motive as mentioned by [Baumann and Scheffer \(2011\)](#). With this background, studying flow experiences among academicians in a higher educational set up, where the job involves both teaching and research, will help us to understand the nature of flow experiences in the unexplored area of research. Moreover, the flow experience in research can be compared to that of teaching.

## **PRESENT STUDY**

Understanding the experience of flow among academicians was important for several reasons. Literature review suggests that flow facilitates job performance, self-efficacy, and well-being. From a person-centric view, persistent flow at work can be regarded as one of the strongest factors leading to engagement in work. Hence, a better understanding of flow at work can lead to benefits for both organization as well as employees.

The study is confined to academicians, who are involved in both teaching and research activities. The decision to limit the study to a single occupation was taken as the work-related feelings are likely to vary. Academics as an occupation was chosen for study as being a solitary occupation, high role of intrinsic motivation can be perceived among academicians. High quality of teaching and research can induce flow upward spirals among students. The context of the study can provide an opportunity to study the interaction between flow states of students and academicians.

Quantitative studies on flow have faced problems in operationalizing the concept, distinguishing between antecedents of flow and, constructing

proper scales. [Sánchez, Schaufelb, Salanova, Cifrea, and Sonnenschein \(2011\)](#) saw problems in operationalizing the construct of flow. This was mainly due to the difficulty of assessing or “capturing” the flow experience itself. As “volatile” nature is inherent to flow, it is difficult to discriminate between the proximal antecedents and the flow experience itself. Literature review indicates that no universally accepted scale for measuring flow has been developed. [Csikszentmihalyi \(1990\)](#) and [Marsh and Jackson \(1999\)](#) used a nine-dimension, multi-item, multi-factor scale to apply construct of flow in various settings. [Martin and Jackson \(2008\)](#) opined that these multi-item, multi-factor studies have failed to capture the essence of flow experience. They divided the concept into two parts – short flow and core flow. Short flow is akin to the global, higher order flow construct captured by the original multi-dimensional models while core flow assesses the phenomenology of the flow experience itself. Hence [Martin and Jackson \(2008\)](#) suggested a new core flow scale for researchers. This core scale had 10 items included from previous qualitative studies on flow. However, other studies after 2008 continue to use the original nine-dimension scale ([Burke, 2010](#)). In another study done by [MacNeill and Cavanagh \(2013\)](#), the nine-dimensions scale of [Csikszentmihalyi](#) and four dimension scale of [Marsh and Jackson \(1999\)](#) proved to be misfit to study flow experience in school leaders.

Considering these problems, the present study adopts qualitative research technique to understand the core flow among academicians as using multi-item scale may not capture the flow experience itself. [Csikszentmihalyi \(1990\)](#) first pointed the experience of flow through qualitative interviews. Flow is a personal experience and hence we believe that it would be better captured by open-ended methods rather than close-ended ones, especially when there is little consensus on whether it is a single construct or group of constructs. Additionally, being person-centric and defined by interaction between person and environment, experience of flow can vary for peoples based on aspects like context, nature of job, personality, occupation, etc.

Present study aims to investigate flow among academicians during work. The academicians included in the study have both research as well as teaching as components of their job. The study aims to find out if academicians have experiences similar to flow while working, if their self-conceptualization of these definitions is in line with the academic conceptualization of flow, the number of occurrences of flow experiences, and the factors which they believe lead to flow. The study will also explore the difference in factors leading to flow in teaching and research activities if any. Additionally, academicians constantly interact with their colleagues,



collaborators, and students and operate in a knowledge intensive and learning environment. The present study will closely look into the context of higher education influencing the experience of flow.

## METHOD

The research was conducted using in-depth interviews of academicians. The interviews were semi-structured and the questions were based on the components of flow as described by Csikszentmihalyi (1990).

The sample included 12 academicians from three leading academic institutions in western India. Six academicians were from Indian Institute of Management Ahmedabad (IIM A), three academicians were from Physical Research Laboratory (PRL) Gandhinagar, and three academicians were from Indian Institute of Technology Gandhinagar (IIT G). The sample was purposively chosen to include academicians who had components of both teaching and research in their work. We also questioned the professors on their involvement in other tasks such as administrative duties, committees activities, etc. The dimensions based on which we chose the sample included:

- Representation from natural science (7), social science (3), and statistics (2).
- Experience level of the faculty – high (> 20 years), medium (5–20 years) and low (<5 years). Five participants had high, 4 medium, and 3 low experience levels.
- Role of research in work description. Three participants had high component of research in their academic activities, while 9 had low research components.
- Gender (3 females and 9 males).

The academicians were contacted through e-mail. Due to respondent unwillingness and technical problems, 2 out of 12 interviews could not be recorded and were written from memory.

### *Transcription and Coding*

Once the interviews with the professors were completed, a verbatim transcription of the interviews was compiled. After the transcription process was finalized, the interviews were coded. In the first step, the authors

coded interviews individually. The interviews were chosen in such a way that every author was coding interviews which she/he had not conducted. Once all the interviews were coded, a consensus coding scheme for all the codes was generated. In the second step, the primary codes were grouped under a few categories. In the third step, the categories were grouped under the following themes: needs, compartmentalization of tasks, personality, flow development, time orientation, interaction, and skill-challenge match.

## FINDINGS

The first level of analysis is the enumeration of needs. The needs can be either fulfilled intrinsically or extrinsically. Activities taken to fulfill intrinsic needs were characterized by words such as “love” or “passion” while actions taken to fulfill extrinsic needs were characterized by words such as “like” or “duty.” However both set of words represent positive emotions of the participants.

The distinction of needs into intrinsic and extrinsic led to the compartmentalization of tasks by the academicians. The compartmentalization can be broadly classified as flow-inducing activities and incentive-driven standards. The choice of flow-driven activity and incentive-driven activity was governed by the personality of the academician. For most academicians, research was the flow-inducing activity and teaching was the incentive-driven one.

Based on our analysis, we propose that the flow experience can be classified into two categories: flow initiation and flow development. The three themes of needs, compartmentalization of tasks, and personality can be grouped under flow initiation. The development of flow was guided by processes such as spillover effects, time orientation, and interaction. Spillover refers to the transfer of flow from one person to person or from one activity to another. Time orientation refers to the role of time management in experiencing flow. Time management and time limits was a theme that emerged in most of the interviews. Proper time management helped the academicians structure the task properly and this induced flow by giving greater clarity about the processes. Interaction refers to the interaction between teachers and students and the interaction between collaborators. Most respondents identified collaboration in research as a necessity for improving impact of work. Respondents also identified collaboration as a

source of flow. Interaction between teachers and students was identified as one of the prime drivers of flow in teaching.

We also identified certain challenges faced in experiencing flow. The most important challenge in experiencing flow was the skill-challenge match. Other challenges in experiencing flow included personal and organizational factors. In general, personal factors were a bigger problem in achieving flow while organizations were generally perceived as supportive.

### *Flow Initiation*

#### *Needs*

Self-determination theory (SDT) of motivation, proposed by Deci and Ryan (1985) speaks about the basic psychological needs that are necessary for psychological growth, integrity, and well-being. These psychological needs are the need for competence, relatedness, and autonomy. According to SDT, people are motivated from within, by interests, curiosity, care or abiding values. These intrinsic motivations can sustain passions, creativity, and sustained efforts even when there is no extrinsic reward or support.

Many researchers have identified intrinsic interest and motivation as a component of flow (Csikszentmihalyi, 1990; Demerouti et al., 2012; Hsu & Lu, 2004). We found that, based on the relative strength of needs, the conditions for flow varies for academicians. Hence, we propose that different individuals have varied needs and, the components of flow can be different for different people.

It was found that academicians experienced both intrinsic as well as extrinsic motivation. However, flow was driven by intrinsic motivation. Based on the data we divided intrinsic motivation component to two parts – feeling oriented and task oriented. According to Csikszentmihalyi (1990), flow is completely focused motivation. It is single-minded immersion and represents perhaps the ultimate experience in harnessing the emotions in the service of performing and learning. In flow, the emotions are not just contained and channeled, but positive, energized, and aligned with the task at hand. This approach to flow led us to consider emotion and task separately while understanding the intrinsic motivation

Feeling-oriented intrinsic components identified by academicians were affection to students, affinity for the subject, passion, love, dedication for the job, dispositional optimism, sense of wonder, creativity, comfort, solace, and enjoyment. Following excerpts supported this argument.

I am very passionate about teaching. I think that's one of the few things I really love.

So I would say that developing the affinity or affection for research per se is the important thing.

Academicians who had emotional relatedness toward the job had higher occurrences of flow.

Task-oriented intrinsic interest were effortlessness, challenge, novelty, problem solving, control, originality, idea generation, investigation, feedback, learning. When academicians were asked about the instances of the flow experience they expressed in following way.

And usually that happens whenever you know you are investigating a problem or something like that.

So I am striving to do that. In the end of the day, I am not unhappy even if it is not published because I discovered something new.

The antecedents of flow are also varied for academicians. Few of them were passionate and loved their work, which led to flow. Few of them appreciated the challenge and learning. So it appears that in a professional work setting, the definition of flow would be varied depending upon the individuals personality and self-views.

At the same time, academicians felt intrinsic interest only in particular stages of the work. For example, in research only idea generation and model building was considered to involve flow. Most of them disliked the part of work related to publication procedures. Meanwhile, for some, publication was a more important outcome than the research. This phenomenon of having intrinsic and extrinsic motivations for the same task can be understood by using the theory of explicit and implicit achievement motives. The achievement flow motive is defined as the intrinsic component of the achievement motive. Operant Motive Test (OMT) theory (Kuhl et al., 2003, as cited in [Baumann & Scheffer, 2011](#)) identified affective sources of motivation – self-determined flow and incentive-driven standards of excellence. This also emerged from our analysis of research-focused academicians.

Which is closest to my heart and about the love I feel and the satisfaction I get for doing it, I would definitely rank teaching first.

So self motivation is something that checks the quality and you can put a number of hours for research without getting bored or tired and that is a difference.

Contradictorily, few of the academicians found not only interest as a criterion for flow, but importance of work to various parties involved.

Because it may be interesting just for you, it may not get interest from others. If it is interesting for many of us, then it becomes a problem of high importance.

Our analysis suggests that academicians have both types of flow – self-determined flow and incentive-driven flow. Hence, the academicians are motivated by a general achievement motive rather than a specific aspect of the achievement motive. The core aspect of the general achievement motive is to deal actively with an internal or external standard of excellence by changing an object toward a quality standard, improving it with respect to certain criteria, learning something, or meeting a requirement (McClelland et al. as cited in [Baumann & Scheffer, 2011](#)).

The extrinsic motivation components in the profession were contribution, rewards, publications, appreciation, growth in career, and importance of topic in research and involved academicians in the job in the absence of intrinsic interest.

I will like to see my results. Any work that you do, you will like to see the results.

Say for instance, I want to publish a paper in Nature or Science because I want to get famous.

But the thrill of seeing it in print is so exciting that you work towards it.

Rewards and results-like performance of the students at the end of the semester, publication of research and reviewers comments affected to the extent academicians felt flow.

### *Compartmentalization of Work*

Our analysis suggests that academicians have two levels of division of work. The first was based on nature of task – research and teaching. These two may be related, unrelated, or complementary. Most of the academicians, found the above tasks as related and complementary, though their preference was for research.

Secondly, work can also be divided on the basis of the drive – interest and duty. Most of the academicians in our study considered teaching as a duty and research as an interest. However, overtime, duty was internalized into personality and that also led to flow especially in case of interaction with students.

This leads us to link flow experience with the meaning of work. The reasons for academician choosing the profession was varied namely, value fit, opportunity, interest, accident, or inner calling. Though all academicians reported satisfaction with their work, participants who expressed “inner

voice,” “hidden power,” “gut feeling,” “intuition,” reported higher occurrences of flow.

And I think when you do something you love to do, a flow come naturally. I think there is a hidden power within that drives you. Sometimes it becomes effortless.

There is an inner voice that tells me that I am more of a teacher than a researcher.

The higher the person job-fit, greater was the level of self-realization, intrinsic satisfaction, and enriching experience.

### *Personality and Flow*

The analysis suggests that academicians have different pre-conditions of flow because they have different psychological needs. The personality traits determine the specific psychological needs, and hence, different experiences and occurrences of flow.

Keller and Blomann (2008) argued that a strong internal locus of control (LOC) pre-disposes individuals to perceive control in situations where they experience a compatibility of skills and task demands, which is one important underlying mechanism of the moderating role of internal LOC orientation. We found that academician H who, had a high LOC, experienced more instances of flow.

... autonomy is very important. Most of the times I do things that do not by and large infringe my autonomy as far as possible. So most of the times, I am fairly happy with what I am doing.

### *Flow Development*

Earlier literature described flow as transient and momentary experience (Csikszentmihalyi, 1975). Nielsen and Cleal (2010) found that activities are of greater significance to flow states than more stable job characteristics. Hence, nature of task, activity, and stage of the work determines the experience of flow. Our experience also strengthened this view. Among academicians we found that there were peaks and troughs in the flow process, which varied for various stages of work. However, although flow remained dormant or active depending upon the nature of activity and stages involved in the work, it never died. We also found that interest development was an antecedent of flow development.

### *Interest Development*

Various factors led to interest development. Few of the academicians were inspired by renowned personalities and, conducive environment. It was also noticed that academicians who chose the profession because of external demands and opportunity later internalized the work and developed interest that led to flow. One of the academician stated that his association with Nobel laureate Dr. C. V. Raman led to the development of interest.

But my house was always filled with scientists, astronomers particularly, and when Raman passed away, his son took over the Raman institute and he was an astronomer, a famous astronomer. So he spent long hours talking with my father and other colleagues. So the atmosphere in my house was full of science. I think it was natural in my case that I wanted to be an astronomer ... So for me it was natural. I could have been what I wanted. I chose to be an astronomer.

### *Spillover Effect*

Various academicians described flow as a permanent state, that either remained constant or increased with age. Flow also varies with different stages within a particular task. For example research involves various stages like uncertainty, problem solving, anticipation, and conclusion. Problem solving was considered as the activity where involvement was highest.

So usually that happened to... that happens when I am solving problems. So if you are, or you are trying to understand the concept on something and then you want to create a some, kind of an exotic problem out of it and want to get the physical insight into it then it happens to me.

Some academicians talked about spillover effect of flow in which flow in preceding task led to higher enjoyment in subsequent tasks. This spillover effect was reported either in the next task, or related task, or entire day.

The outcomes of flow which are feelings of enjoyment, happiness, and absorption were transferred to next activities and affected the quality of next job, thus creating a positive emotion cycle.

Sense of satisfaction that you get from completing one task makes you happier and when you are happy then you do the other work more efficiently.

Now if you are very happy and satisfied with the research you are doing and that particularly a project is providing you that much of satisfaction then specific to that you have a positive experience and it may spill over and affect your positive mood for other things in the day.

At the same time hindrances to flow created negative effects and affected the mood and outcome in subsequent activities.

For me, it is very important. Because if I am not able to enjoy my experiences in the class then for me the day has gone waste.

### *Time Orientation*

Literature suggests that the intense experiential involvement of flow leads to merging of action and awareness, a sense of control, and an altered sense of time (Csikszentmihalyi et al., 2005). However, in our analysis, we found that for many respondents the time boundedness of their actions led to generation of flow. Academicians were pressed for time, and said that they “feel short of time.” There are certain activities like research or teaching which they found interesting, liked to do. Alternatively tasks like admin activities or routine tasks needed to be performed as part of the job. To manage this, academicians devised strategies like prioritizing, optimizing, and structuring the task. Because of this time constraint participants reported that it was difficult to lose track of time. However, when there were deadlines academicians gave all their concentration to the task, leading to generation of flow.

You know when timelines are stringent and deadlines are there, then I do not hear a knock on the door so I get absolutely immersed in what I am doing at that time. When pressures are high and there is a certain deadline to be met.

One of the academicians stated that one has to “steal time” for the interesting activities.

So, if you usually don't steal time, you will realize that you will not get any time for research and that is pretty much true

However, few of the academicians expressed concern that deadlines hamper the experience of absorption and complete involvement. We also found that many academicians did not prefer teaching for the above reason. This suggests that flow has different antecedents which are linked to personality traits. Openness to experience leads to flow states by inducing optimum stimulus levels and cognitive spontaneity (Woszczyński, Roth, & Segars, 2002). Conscientiousness is strongly linked with locus of control (Hatstrup, O'Connell, & Labrador, 2005) and locus of control is positively related to flow experience (Keller & Blomann, 2008). Openness to experience is linked to spontaneity as it leads to cognitive flexibility, while conscientiousness is linked to greater structuring as it is positively related to



order and self-control (Roberts, Chernyshenko, Stark, & Goldberg, 2005). Hence, our analysis suggests that different personality traits can lead to flow via different mechanisms and the different personality traits will be manifested through either greater spontaneity or greater structuring in one's life.

May be I like what I do, may be I know that these are the certain things I want to do, I wish to make these kinds of contributions, I want to develop myself in a particular way even otherwise in my work. It's like what's your priority that keeps you going. Isn't it? Prioritize that's what matters.

One must be involved in an activity with a clear set of goals and progress. This adds direction and structure to the task (Csikszentmihalyi et al., 2005). Control in terms of structuring of task and time management lead to feelings of satisfaction and flow among some.

So those things also when you say you have to prioritize, it's been a priority if it's not a priority then you can't do it every day.

Sureness is I am disciplined enough to be able to complete the project. So then you do not worry about the other things.

Classic approach to flow suggests that flow is a subjective state that people report when they are completely involved in something to the point of forgetting time, fatigue, and everything else but the activity itself (Csikszentmihalyi et al., 2005). Our interviews suggested that people experienced greater flow when they felt their work was a calling or they felt their work was a hobby. The "work as a hobby" concept was mostly elucidated by research-focused scientists, who seemed to have greater autonomy in terms of time and structuring of problems.

I think if a person is a true researcher, he will never be tired. The reason is that scientific research is the only profession where your hobby is your duty. So what I am doing I am enjoying.

In few of the stages of work like conceiving ideas, developing models, or theories which were not time bound, academicians experienced merging of action and awareness. Hence, we propose that in professional work settings different stages will involve different levels of flow or no flow experiences.

### *Interaction and Flow*

One of the objectives of study was to find out the effect of interaction between academicians and students, colleagues, subordinates, and collaborators.

Academicians suggested that building a personal equation with students led to a feeling of higher enjoyment and involvement while teaching in class. This resulted in feeling being reciprocated. However, few of the academicians maintained that personal equation was not necessary for the flow experience. The difference in opinion can be attributed to personality trait. It also brings out that flow conditions are individual-specific.

At least when I am teaching I actually try to block any kind of so every student in the class is at same level. Even if there is something you are talking about I have a better personal rapport or relationship with someone outside the classroom, I actually try not to get it into the classroom.

Contrary to this few academicians found personal rapport as very important criterion to achieve flow.

When I started to teach, then they were unknown to me, but then we got to know each other quite well. They sort off became friends. In the last class I told them that from now on, we are friends. We are not teacher and students.

The other interaction-related determinants of the quality of flow were students' academic level, students' interest level, and preparedness for the class.

Among researcher, collaboration led to better flow experiences when parties in the interaction process had matching personality, matching interest, personal equation, ability, and diverse background. Interaction quality increased when there was face to face interaction.

... moving into problems that are interdisciplinary in nature and nobody is perfect in everything. So then it becomes how synergistically, you can get best out of your friends and solve the problem ... So I think collaboration is as important as ... The quality of work increases with collaboration.

Good collaboration is where I think often when both people are at the same level, of same intellectual capability because if one is very high and one is very low then it's not as interesting in terms of the discussions.

Better flow resulted in positive emotional and task-related outcomes. Task-related positive outcomes, generated due to quality interactions, included improved productivity, impact, quality learning. The positive feelings generated due to flow led to upward spiral of emotional well-being and included feelings of joy, enjoyment, effortlessness, and comfort. Most respondents suggested that the positive interactions were reciprocal in nature and flow in one party could induce flow in the other.

If I seek curiosity from the students, certain excitement from the students and gets me excited, that definitely creates a flow versus those things that I have to literally spoon feed, have to tell things that is not expected, that gets me down.

For researchers, interaction took the form of collaborations for cross disciplinary project. The collaboration was usually need based and used as a strategy to overcome hindrances to flow.

Very often what happens is I'm looking at a problem, I'm stuck on it. I go and ask a colleague on this floor, can u explain something on it ... If at some point I realize that he is helping a lot, then I would say look to be fair to you, let us be collaborators.

### *Challenges*

Various organization and personal factors may cause challenge to the experience of flow. Most of the academicians in our study described the organization as supportive. However things like politics, administrative tasks, bad teaching experience, and mismatch between effort and opportunity were some of the task-related challenges.

And if I get stuck somewhere here ... might be some chances that I might lose interest.

Literature on flow has concentrated on challenge-skill framework to explain the phenomena of flow. In our study we found that academicians also upgraded their skills to meet challenges, when it was perceived important, and experienced flow even during the transition period. When they perceived a mismatch between skill and challenges, they acquired additional skill or else prioritized and optimized their tasks to overcome the challenge.

Antecedent activities of flow-inducing activities were accorded great importance to ensure that the flow-inducing activities were performed appropriately. For example, academicians took the task of class preparation very seriously in order to maximize the experience of flow while teaching in class. Though the task of class preparation was not interesting in itself, it was liked to some extent because of its potential for future flow experience.

For some academicians, existence of challenge was essential for the task to be exciting and enjoyable. The challenge could be due to the inherent difficulty of the task or the novelty of the task. This suggests that the perceived challenges in a task could be task-related or skill-related. Pfister (2002), as quoted in Engeser and Rheinberg (2008) empirically compared the operational definition of challenge-skill with difficulty-skill and found no difference.

... when you are doing something you are not an expert of, it always gives you more exciting times. How will you do it, how will you manage it? So in terms of excitement when you are venturing into those things that you are not an expert at, it gives you more pleasure and more satisfaction also.

On the personal front, stress, physical tiredness, health problems, guilt of not being able to give time for family were the challenges faced by academicians. These personal challenges were hindering the flow experience. External demands which academicians were not interested to do created frustration. Most of them, they tried to overcome it through rationalization.

Not since I got married. But yes, when we were bachelors there were days when we slept here, did not go back to family. Once you have a family, you have kids and all that; you have to be back by 7 o'clock in the evening.

Developing and acquiring skill was used as a strategy only in task-related challenges. Not able to deal with personal challenges effectively created a sense of guilt among academicians.

### *Limitations*

The study was conducted among academicians who taught and researched about different subjects. Hence, it is difficult to separate the teaching-specific components of flow from the research-specific components of flow. Another potential problem was the research component of work varied greatly even within academicians belonging to the same institution.

Another limitation of the study was the difficulty in conveying the concept of "flow." Our experiences with the interviews suggest that the concept of flow is very difficult to distinguish from the concepts of work involvement and job satisfaction.

The third limitation of the study is related to the transitory nature of flow. Flow is conceptualized as a transitory experience and hence a person's recollection of the experience may not be able to capture the full richness of the experience.

### *Practical Implications*

The Humboldt model of the university, which has been accepted globally, combines teaching with research. However, some academicians have suggested that this combination of teaching with research may not be optimal for either teaching or research ([http://www.nytimes.com/2014/02/06/opinion/a-solution-for-bad-teaching.html?\\_r=0](http://www.nytimes.com/2014/02/06/opinion/a-solution-for-bad-teaching.html?_r=0)). This chapter may help

answer the question of designing a better mix of teaching and research for academicians. Since flow experiences are governed by psycho-social profiles of academicians, by considering these aspects, academic institutions can allocate a mix of research and teaching assignments for academicians that will be more conducive for employee satisfaction as well as organizational productivity.

Another important finding of this study is that person–person interactions induce upward spiral of flow and emotional well-being. A better understanding of the conditions under which person–person interactions induce flow can help design work conditions in which flow inducement is more frequent. Although the current study did not focus on the link between flow and productivity, participants reported a positive association between flow and productivity. Assuming a positive link between flow and productivity, more flow can lead to higher productivity.

## CONCLUSION

The study suggests that flow among academicians is dependent on the primary activity of the academician (researcher/teacher) as well as the broad subject area of the academician (science/social science). Overall, we found that researchers had more occurrences of flow than teachers and, scientists had more occurrences than social scientists. Among the 12 academicians, 8 academicians found research more intrinsically rewarding, while 4 academicians found teaching more intrinsically rewarding.

For researchers, problem solving and model formulation was identified as the strongest flow-inducing activity. Another important finding of the report is the partial distinction between the process of teaching and love for the subject. For some academicians, the process of teaching was intrinsically rewarding even when their affinity for the subject was not very high or their research interests differed from the subject they were teaching.

Interaction, including collaboration with research colleagues, was another important determinant of flow. The importance of interaction was primarily stressed for the teaching process. Students' ability, students' preparation, and students' interest enabled flow-inducing interaction. A sense of wonder and need for knowledge-creation were identified as some of the important drivers of flow-inducing activities among researchers.

Other important conclusions of the study were:

- A sense of calling or a strong love for the subject induced greater flow
- Interaction with successful people in the field led to greater love for the subject and sometimes induced traits that help generate flow
- Interest development led to flow development.

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## APPENDIX

### *Framework for interview questions:*

Please describe the time when you felt the greatest involvement in your work.

- a. Teaching or preparing to teach
- b. Extent of class preparation
- c. Difficulty level of the topic
- d. Flow in consulting assignments

Do the feelings last longer if the students are also engaged in the class?

- a. Academic level of the students
- b. Interest level of students
- c. Personal equation with students
- d. Type of students (PGP, PGPX, MDP, FPM, PhD grads, undergraduates, post-graduates)

Please describe your involvement in the research process?

- a. What are the feelings that guide the research process?
- b. What are the stages of research? How does enjoyment vary with the stages?
- c. How important is collaboration in research? What is the psychological impact of collaboration (sense of ownership, flow due to interaction)?
- d. What are the intrinsic and extrinsic motivators of flow?
- e. How does flow in research compare to flow in teaching?

Change in flow experience with time

Consequences of flow:

- Experience after feeling of flow
- Work quality and flow
- Job satisfaction and flow

Where do you find flow in non-work context? How can one compare flow in work and non-work contexts?