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Effect of Participation in Flow Experience Activity on Depressive Symptoms in University Students: A Quasi Experimental Study

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The purpose of this research is to explore the efficacy of flow experience as a group intervention to reduce depressive symptoms among university students. Sample comprised of 17 university students, aged 18 to 23 years (*M*= 20; *SD*= 1.56). Participants were recruited through multi stage sampling and final selection was made on the basis of scores on Center for Epidemiologic Studies Depression Scale Revised (CESD-R, Van Dam & Earleywine 2011). Participants were given Flow Activity Identification Questionnaire (FAIQ), to identify flow experience activity. FAIQ was developed by authors during first preparatory phase of this research. Participants participated in the identified activity for 90 minutes each week for four weeks. Results showed significant decline in depressive symptoms among participants after participation in flow experience activity. It is concluded that flow experience is an effective group intervention that can be used for students experiencing depressive symptoms.

Keywords. Flow Experience, Depression, Qusai Experiment, Positive Psychology Intervention, Flow Intervention

Flow experience is an intense and pleasurable state of mental involvement characterized by complete immersion in the activity (Csikszentmihalyi, 2000). Nakamura and Csikszentmihalyi (2002) proposed some preconditions for flow experience i.e first is challenges or opportunities that slightly stretch the existing skills and the second is presence of immediate goals and feedback about the progress that the individual is making on those proximal goals.

The concept of flow experience has its origin in the earlier observations of Csikszentmihalyi (2000). It was found to be a common experience between play and non-play activities. Flow experience compelled individuals to stay focused on the activity completely ignoring the bodily states of hunger and fatigue and moving on once the task was complete. Flow experience has been empirically investigated in diverse settings like work (Aubé et al., 2018; Aydin Kucuk, 2022; Digutsch & Diestel, 2021), sports (Boudreau et al., 2020; Elbe et al., 2010; Goddard et al., 2021), virtual reality technology use (Han et al., 2020; Kim & Ko, 2019), gaming (Chan et al., 2021; Matute-Vallejo & Melero-Polo, 2019), leadership (Badibanga & Ohlson, 2021), online shopping (Lina & Ahluwalia, 2021; Tuncer, 2021), web user experience (Disastra et al., 2019; Suryani et al., 2022).

Flow has been reported to be associated with emotional well-being among adolescents (Bassi et al., 2022). Introducing students to flow experience based stress coping strategies predict mental health (Aydin, 2010). Association between flow experience, mindfulness and wellbeing has also emerged as protective factor against the deleterious effects of quarantine during Covid-19 (Sweeny et al., 2020). Flow experience has frequently been used in occupational therapy to increase engagement in the rehabilitation efforts. Silverman et al. (2016) found flow experience along with meaningfulness to be the predictor of therapeutic outcome in their study on songwriting interventions. Although the connection between flow experience and well-being is well established in correlational researches it has rarely been explored in clinical research or as an intervention for reducing psychologically distressing

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mental health issues. Riva et al. (2016) came up with a comprehensive discourse on inclusion of flow experience in clinical settings and its appropriateness for inclusion in psychodynamic therapies because of the fluid, subjective and psychodynamic nature of the construct. An earlier attempt to use flow as intervention in therapy comes from a case study by Fave and Massimimi (1992) where flow experience activities were discovered through experience sampling method and the patient of Agoraphobia was encouraged to increase participation in those activities resulting in gradual improvement in symptoms. Gerhardsson and Jonsson (1996) carried out a clinical observational study in terms of flow experience with three subjects who were suffering from schizophrenia for more than five years and were dismissed for 6 months at the time of study. They reported that their subjects were able to experience flow in their chosen activities. As the study was conducted in inactive phase of schizophrenia, no effect on the symptoms of disease was recorded.

The present research proposes to use flow experience as a group intervention for university students with depressive symptoms. Various studies report a higher incidence of depressive symptoms among university students in Pakistan (Asif et al., 2020; Khan et al., 2021). Although flow experience based programs have been successfully used to boost stress coping strategies among adolescents (Aydin, 2010), there is gap in research informing about wellbeing or changes in symptoms of any mental health issue using pre-post intervention research strategy. The objective of this study is to explore the efficacy of flow experience activity-based intervention among university students suffering from depressive symptoms. To explore the impact of flow experience on depressive symptoms among university students it was hypothesized that there will be decrease in the level of depression after practicing flow experience activity among university students.

Method

Study was conducted in two phases. In the first or preparatory phase a questionnaire was constructed to facilitate identification of individual flow experience activity. In the second or main study phase a quasi-experimental study was conducted to test the efficacy of flow experience activity for reducing depressive symptoms.

Phase 1

Research Design

Questionnaires were constructed using literature review, expert opinion and committee approach. Cronbach Alpha reliability and Cross language validation was computed.

Participants

Sample comprised of 69 (27 men, 42 women) individuals recruited on the basis of convenience sampling. Age of the participants ranged from 16-42 years (Mean=24.4, SD=5.88). Education of the participants in completed years ranged from 10-18 years (Mean=14.33, SD=2.41). 42 participants were unmarried, and 27 participants were married.

Procedure

Initial draft of questionnaire to identify flow experience was prepared after reviewing previous scales. It was sent to a foreign expert, Mr. Owen Schaffer for review. At the time of

review Owen Schaffer was PhD scholar pursuing his degree in flow and enjoyment in games at DePaul University. He is also the author of flow condition questionnaire. The draft was revised keeping in view his recommendations. Final version of questionnaire was evaluated and corrected by Prof. Mihaly Csikszentmihalyi (Prof. Csikszentmihalyi is the author of the construct of flow experience and one of the pioneers of the Positive Psychology). A parallel Urdu version of the questionnaire was constructed following expert feedbacks on English version and approved by a committee comprising of a Clinical Psychologist having PhD in Clinical Psychology and a Psychologist having MPhil Degree in Psychology. Reliability analysis and cross language validation of questionnaires was carried out on a small sample.

Result

Table 1

Cross Language and Test-Retest Reliability of Flow Activity Identification Questionnaires (N=69)

n	1st Administration	2nd Administration	γ
31	FAIQ English	FAIQ Urdu	.78
38	FAIQ Urdu	FAIQ English	.77

Note. p<.01, FAIQ= Flow Activity Identification Questionnaire

Table 1 shows the correlation between English and Urdu questionnaires developed to identify flow experience activity. Result indicates a high-test retest reliability after a gap of 7 days.

Phase 2

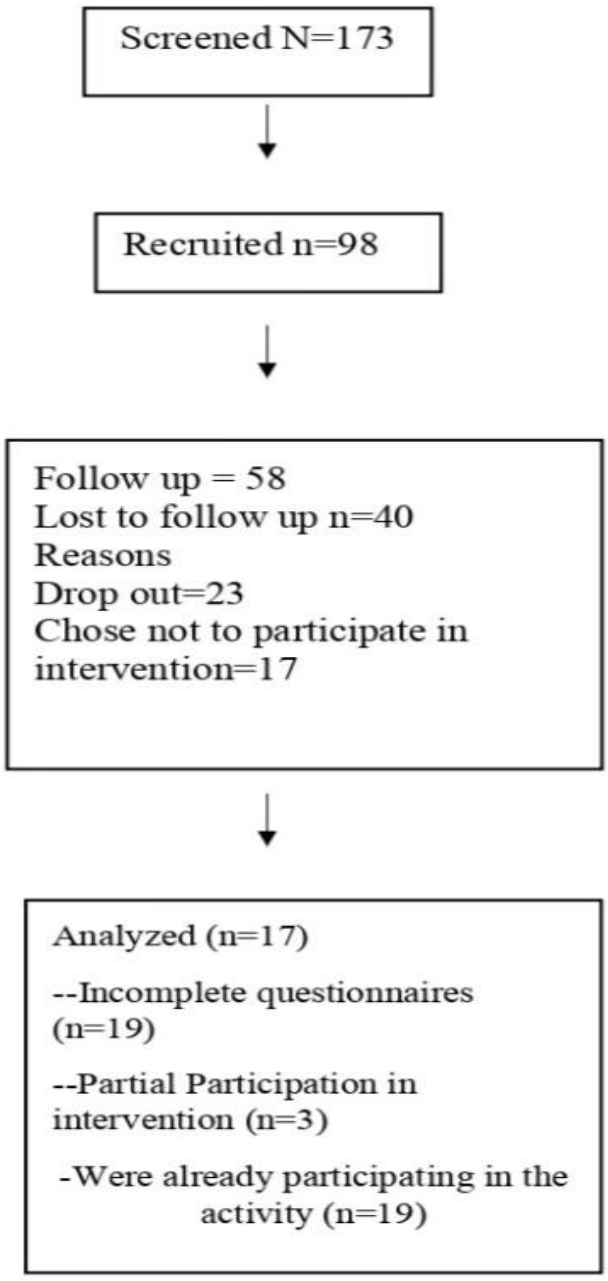
Research Design

Quasi experimental pretest posttest design was used. Participants participated in the individually identified flow experience activity following Pretest. Posttest was carried out after four weeks participation in the intervention. Pretest and post test scores on level of depression were compared to assess the suitability of flow experience as group intervention for students experiencing depressive symptoms.

Participants

Sample comprised of 17 students of University of Karachi (2 boys, 15 girls), aged 18 to 23 years (M= 20.2, SD= 1.56). Education of the participants in terms of completed years ranged from 12-15 (Mean=12.9, SD=1.17). All participants were single. Participants were recruited from different departments of the University of Karachi through multi stage sampling. In the first stage list of all departments in faculties of Arts and Sciences were acquired from the Website of University of Karachi. Three departments were drawn randomly from each faculty for inclusion in study. Classes from departments were selected on the basis of number of students in the class and availability. In the last stage of sampling purposive sampling was carried out. Only the students who scored above 16 on Center for Epidemiologic Studies Depression Scale Revised were recruited in the research. Students under treatment for any active mental health issue were excluded from the analysis. Students who were already practicing in the flow experience activity were also excluded from the analysis.

Figure 1
Sample Flow Sheet



Instruments

All the instruments were presented in English and Urdu version printed side by side. A participant information sheet informing about research, its purpose, rights of participants, contact details of researchers and a list of mental health facilities was provided to all the research participants to keep.

Demographic sheet. Demographic sheet was used to acquire personal details of participants like gender, education, age and marital status, information about previous and current treatment.

Center for Epidemiologic Studies Depression Scale Revised (CESD-R,Van Dam & Earleywine 2011). It is a freely available atheoretical scale that is based on DSM 5 criteria for depression (Van Dam & Earleywine, 2011). It comprises of 20 items. CESD-R has 5 response categories, ranging from 0=Not at all or less than 1 day to 4= nearly every day for two weeks. Cronbach α reliability of the scale is reported as 0.928. The scale was translated in Urdu by the researchers of this study for an earlier study and used in the current study. Cronbach α reliability for Urdu version is 0.93.

Flow Activity Identification Questionnaire (FAIQ). It was developed in the first phase of this research. It comprises of 12 items. Each item has 5 response categories, ranging from 1= Never to 5= Always. At the end of questionnaire an individual activity is identified that brings flow experience to the individual completing it. Cronbach α is .80 and .81 for the English and Urdu versions respectively.

Procedure

This study was carried out in University of Karachi. Permission was sought from the respective heads of the departments. Departmental coordinators in each department facilitated the data collection process by allocating classes from their respective departments having strength of 40 or more students. Classes having strength of more than 40 students were recruited to be able to retain a minimal number of students in case of students unwilling to participate or drop outs. Students were invited to attend a 45 minutes long research session. Students who were interested in participating in research made themselves available for research recruitment on the allocated day and time. In each department a group research session was held in which students were provided information about the research and its purpose. Researcher responded to the queries of students regarding the research.

Participant information sheet with contact details of researchers was provided to all the students who were interested in participation. Complete confidentiality and anonymity were assured to the participants. Students were free to withdraw their participation from research at any stage without any penalty or loss. Students opting to participate in research signed the informed consent form and completed the pretest questionnaire.

Table 2

Flow Intervention Plan

Steps	Tasks
1	All students completed the flow activity identification questionnaire along with pretest questionnaire. Individual activities were identified for each. Some of the examples of identified activities are playing cricket, book reading, cooking, painting, gym activities, writing
2	Students were encouraged to come up with four goals related to their "identified activity. For example, probable goals for playing football can be getting sports kit, inviting people around to make a football team, playing a football match and participating in a football match with other teams. Since depression is characterized by psychomotor retardation,

	first goal was preferred to be one with planning and making necessary arrangements for participation in activity
3	Students were asked to arrange the goals in increasing order of difficulty. Few examples were provided to the students on how to develop and arrange goals. The students who still had difficulty forming goals related to their identified activity were individually guided.
4	A day was allocated for students in each department to start participation in the intervention. They were instructed to start their first goal in the first week and spend at least 90 minutes to complete the goal during the week. Goals if found time consuming, difficult, easier or partially complete were adjusted during the research. Students who needed more time for the activity carried the goal to next week instead of initiating the next week's goal. Students who completed the goals earlier added new goals for the remaining weeks. For example, if a student having identified playing football had second week's goal as inviting people to make football team was unable to complete the required number of players in second week the goal could be completed in third week and if the team was made within first week, third week's goal 'having a football match' could be completed in second week.
5	Participants were contacted on weekly basis through text messages with their consent. During first contact participants were reminded about their individual goals. In later weeks feedback was acquired about last week's goal and a reminder about the next goal on their list was given.

All participants completed the research questionnaire before and after the intervention. Complete participation in research entitled students to enter a lucky draw for a 1000 Rs to be given to one research participant.

Students who did not complete participation were approached by the researcher and the reason for dropping out was investigated. Reasons provided by the participants for dropping out were being involved in a road accident, personal problems and family issues/commitments, lack of interest in this research, illness, lack of time, study or work-related commitments, traveling at the time of research, death of a family member, forgetting to complete intervention task, not receiving text messages, not feeling the need for any psychological intervention

Result

Data was analyzed using IBM SPSS version 20. Descriptive statistics and paired sample t test were used to compare pre-post intervention data.

Table 3

Descriptive Statistics for Depressive symptoms Before and After intervention (N=17)

Depression	M	SD	SK	K	Min	Max
Pretest	35.71	8.32	-.154	.319	17	50
Posttest	23.76	17.02	.444	-.808	0	57

Note: M=Mean, SD=Standard Deviation, SK=Skewness, K=Kurtosis, Min=Minimum, Max= Maximum

Skewness and Kurtosis (Table 2) was well within the normal range of + - 2 (Kline, 2016) reflecting normal distribution of scores.

Table 4

Paired Sample t test for Depression before and after the four week Flow Experience Intervention (N=17)

Variables	Pretest		Post test				95% CI		
	M	*SD*	*M*	*SD*	*t (16)*	*p*	*LL*	*UL*	*Cohen's d*
Dep	35.71	8.32	23.76	17.02	2.805(16)	.013*	2.92	20.97	0.68

Note: M=Mean, SD=Standard Deviation, CI=Confidence Interval, Dep= Depression

Paired sample t test (Table 3) shows significant decrease in the level of depression (t (16) =2.805, p=.013) following four weeks of participation in flow experience.

Discussion

The purpose of current study was to generate the empirical evidence for the application of flow experience-based intervention on university students suffering from depressive symptoms. Findings of the research supported the hypothesis. Participation in flow experience activity for four weeks led to significant decline in depressive symptoms among university students.

Our research provides a formal framework for using flow experience as an intervention in treatment and further research. Use of a structured questionnaire facilitates the identification of flow experience activity in single session. The initial studies relied on experience sampling method to identify the flow experience inducing activities that required the observations to be recorded for a longer duration before an activity could be identified. An activity that the individual is well familiar with for having brought pleasurable feelings in the past has more potential of bringing positive change. Sin and Lyubomirsky (2009) found individuals who self-selected to practice positive psychology intervention benefited more from the intervention because of higher motivation. In our research the decrease in depression symptoms after practicing flow experience may have been because of active involvement of research participants in designing the goals for each week.

Flow experience activities are intrinsically motivating (Csikszentmihalyi, 2000) so the opportunity to restart the activity pushed our research participants to continue the activity session each week. Goals for each week were arranged in order of increasing difficulty that permitted slight stretching of existing skills. Having goals that slightly stretch the skill level beyond existing skill set of the individual keeps the equilibrium that intrinsically motivates the individual to keep on indulging in the activity. Nakamura and Csikszentmihalyi (2002) posit engaging in just manageable challenges that have series of goals and opportunity for acquiring immediate feedback about progress in goals, push one into the subjective state of flow. All research participants were subjectively insightful about the formation of goals and their organization in increasing level of complexity.

The current research fills the gap that was there because of lack of experimental evidence for the use of flow experience activity to facilitate reduction of depressive symptoms among student population. Some past research on flow experience and different aspects of psychological well-being indirectly supports the findings of our research. Mukhergee and Jaiswal (2022) report a coexistence of higher levels of flow, psychological wellbeing and

positive emotion among practicing classical dancers as compared to non-performing artists. Although the research on performing and non performing artists was carried out on non-depressed individuals but since it was carried out during COVID pandemic era that was generally a stressful time, it established flow experience as promising positive psychology intervention. Our research experimentally consolidates these findings in students having depressive symptoms. Brailovskaia, et al. (2020) report a predictive relationship between use of social media to search positive emotions, flow experience and less depressive symptoms. Tse, et al. (2021) report that autotelic personality that is a kind of personality that is more prone to experience flow predicts psychological well-being (satisfaction with life and flourishing) through flow experience. Our research did not identify the personalities of participants. This might explain the students who were not willing to participate in the intervention. They may not be having the autotelic personalities. This claim cannot be put forward as sole reason for subject loss in research and requires verification by further research.

It is pertinent to note here that almost all research participants except one reported the research participation as a helpful or good experience. The participant not having a good experience reported that being compelled to participate in the activity took out the enjoyable part from the activity but subsequently the participant also pointed out that the responses might be due to recent events in her life. Flow experience is essentially a distractive intervention. It might be useful in situations where an escape from stressful circumstances is required. At times the disturbing situation in life needs the coping strategies of cognitive restructuring, assertive skills, or any behavioral change. In such situations a distractive intervention may not be appropriate. Previous research points to protective as well as negative association of depressive symptoms and flow experience. Mosing, et al. (2018) report flow experience enhancing interventions could potentially reduce emotional problems at work place whereas a study by Larche, et al. (2021) found gaming to escape relates to depression. Games are often developed to provide flow experience. According to findings escape gamers find relief from immersive games enhancing flow. Escape gaming associates with problematic video gaming and mindfulness issues. Therefore, despite the experimental evidence provided by present research about the successful use of flow experience to reduce depressive symptoms, involvement of mental health expert cannot be undermined. A mental health expert is in better position to facilitate appropriate use of flow experience intervention for depressive symptoms. Framework formed to identify and practice flow experience activity through our research can be used to test flow experience activity as possible supplementary treatment among other clinical populations.

Conclusion

This research empirically establishes the efficacy of flow experience activity to ameliorate mental health by reducing depressive symptoms among university students. Experimental evidence about the use of flow experience as group intervention for depression was not available in past. This research adequately fills that gap and provides promising scientific base for further research and use of flow experience for improving students' mental health.

Limitations and Recommendations

Research was conducted on a very small sample. Future studies should recruit larger samples to allow better generalization of results. Current study included just two boys among participants as compared to fifteen girls. This was because of the lesser number of boys in the

randomly selected departments. Further studies should improve participation of boys to allow gender comparisons. This study was carried out using pretest posttest design. A comparative waiting list control group can facilitate deeper understanding of constructs.

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