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An Experience Sampling Study of Student Emotional Life: Preliminary Results

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Abstract: We present findings from a preliminary experience sampling study exploring the association between negative emotions (fear and sadness) and student day-to-day activities and circumstances including online use, location, and companions. Experience sampling is a data collection method in which individuals are asked for self-reports at random times of their waking hours. It is best used when data is episodic or experiential in nature. To this end, we created the Ateneo Experience Sampling App (AESApp), a mobile-based application that collects data about levels of student happiness, engagement, fear, sadness, and anger, as well as contextual information such as who they are with, what they are doing, and where they are. We found that students who reported not being online at the time they were prompted tended to report low levels of these emotions. Similarly, students who reported being with companions reported low levels of fear and sadness. In contrast, those who reported moderate to high levels of fear or sadness tended to be alone. Although the implications are interesting, they are suggestive rather than conclusive because of the small sample size. Moving forward, the research team needs to find ways to increase response rate.

Keywords: Student emotional life, experience sampling, sadness, fear, anxiety.

1. Study of Student Emotions using Experience Sampling

Emotions are best studied as they occur in real time, in the context of the events, places, and people that are associated with the felt emotions. This study embarks on a basic understanding of the emotional lives of college level students using experience sampling methodology (ESM). This is, to our knowledge, the first study in the Philippines that applies this approach. For this preliminary study, we focus on students' experiences of two sets of emotions or moods: anxiety / fear (henceforth shortened to "fear") and sad / low / down (henceforth shortened to "sadness"). We aim to determine the following:

- What are the activities or behaviors associated with the experience of these emotions?
- What are the places associated with the experience of these emotions?
- Who are the persons or companions associated with the experience of these emotions?

ESM consists of asking individuals to provide self-reports at random times of their waking hours (Larson, R., & Csikszentmihalyi, M., 2014). It is best used when data the needed is episodic or experiential in nature, i.e. how the participant feels or what the participant is doing *right now* as opposed to *in general* or retrospectively (Christensen, Barrett, Bliss-Moreau, Lebo, & Kaschub, 2003).

The setting for our research was a major private university in Quezon City, Philippines. We recruited participants from approximately 60 sections of predominantly sophomore and junior students from various collegiate disciplines. Graduate students of the first two authors visited these classes and presented a brief slide deck explaining the project's purpose and how students could participate. The team members emphasized that participation in the study will not affect the evaluation of students' performance in the class, and that the teachers of these classes were not involved in the project. To qualify as a participant, students needed to have an Android or iOS cellular phone with Internet access.

Students who were interested scanned a QR code that led to the informed consent form. If they agreed to participate, they scanned another QR code that led to the download site for the Ateneo Experience Sampling App (AESApp).

AESApp is a custom-built experience sampling mobile application. When the user opens the app for the first time, the user is shown several onboarding screens to introduce the app and how it works. After reading the onboarding screens, the user is shown the consent statement and privacy policy of the app. The user must read and agree to the entirety of the consent statement to proceed.

Once the participant consents, the app redirects the user to the account signup or login. The participant may then sign up for a new account by providing their personal information (nickname, full name, school email) and desired password. After signing up, a verification email is sent to the input school email address. The user must click the link in the email to verify their account to be able to log into their new account. This is done to ensure the user is a valid student and to prevent bot attacks and fake or duplicate accounts. To log into an existing account, the user inputs their school email address and password.

For the next two weeks, the participant receives a notification at a random time between 8 am and 12 midnight. The notification is a prompt to log their data for the day. The log screens consist of a brief questionnaire asking the participant how they feel at the current moment, where they are, what they are doing, and who they are with.

Note that all data collection methods were reviewed and approved by the university's Research Ethics Office.

2. Results

Only 33 students participated in the study. The participants averaged 2.8 entries with a standard deviation of 2.3 and a maximum of 9 entries. For this analysis, we only considered the first entry of each student, focusing on the ratings given for fear and sadness, in relation to their online status, locations, activities, and companions at the time they responded.

When we examined the relationship between activities and fear, Fisher's Exact Test showed no significant associations between the two constructs (p=0.51) (See Table 1). There was a significant association between activity type and sadness (p=0.04) (See Table 1), with a moderate effect size (0.47) (See Table 1). Most respondents reporting no or low levels of sadness.

Table 1. *P-values of Fisher's Exact Test and Cramer's V values. Results in light gray are marginally significant. Results in dark gray are significant.*

Emotion	Context	Fisher's Exact Test P-values	Cramer's V
Fear	Online	0.05	0.53
	Activity	0.51	0.41
	Locations	0.30	0.42
	Companions	0.01	0.63
Sadness	Online	0.42	0.39
	Activity	0.04	0.47
	Locations	0.30	0.41
	Companions	0.01	0.64

We examined the association between levels of reported sadness and fear and (a) whether students were online or not at the time the data was collected and (b) what they were doing at the time. Fisher's Exact Test indicated that there was no significant association between online activity and sadness (p=0.42), but there was a marginally significant association between online use and fear (p=0.05) (see Table 1). Those who were online either tended to report little to no fear. The Cramer's V result showed a large effect size (0.53) (see Table 1), meaning fear and online activity affected each other.

Fisher's Exact Test showed no significant association between the emotions and location (p=0.30 for both) (See Table 1). The association between companions was significant for both fear (p=0.01) and sadness (p=0.01). Cramer's V for fear (0.63) and sadness (0.64) showed a large effect size. Many of the respondents who were with company reported no or low levels of sadness or fear. It is interesting to note that students who reported moderate to high levels of sadness and fear tended to be alone.

3. Implications, Limitations, and Future Work

The most interesting implications from this preliminary study had to do with online activity and companionship. Students who reported not being online at the time of the study tended to report no or low levels of sadness or fear. Similarly, students who reported being with companions reported either no or low levels of these emotions. In contrast, those who reported moderate to high levels of fear or sadness tended to be alone. While the Fisher's Exact Test showed that only some of these findings were significant, the Cramer's V results show moderate to strong associations between these emotions and all the activities and contexts (see Table 1). This implies that these associations may be worth examining in greater detail, with more data.

This brings us to the main limitation of this study: data. The study was limited in large part by the small sample size and the sparsity of the responses from those who participated. Indeed, none of the respondents completed all 14 entries. Other researchers who have used ESM have reported that response rate is affected by many factors including time of day (see Rintala et al, 2019) and questionnaire length (see Van Berkel, Ferreira, & Kostakos, 2017). As a next step, the project team should review how these factors might have affected the willingness of the students to respond to the survey and how these factors might be mitigated.

Another consequence of the low response rate was that the opportunities for time series analysis were limited. The research team had originally intended to examine changes to emotions over time. However, we needed more data to answer research questions that were longitudinal in nature.

Despite these limitations, the study does make some contributions. The study resulted in the development of AESApp, an ESM platform that can be used repeatedly, for different populations. It does provide some opportunities for further study. These include determining the dynamics of student emotions over time and under different circumstances. It is hoped that studies of this kind can help with the monitoring of student emotional life as well as the design of appropriate support structures and interventions that can contribute to healthier school environments.

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