

# A Smartphone Application for the Treatment of Generalized Anxiety Disorder

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## Background

Generalized Anxiety Disorder (GAD) is a common anxiety disorder characterized by excessive anxiety or worry about a number of events or activities that cause significant distress for the individual. The Diagnostic and Statistical Manual of Mental Disorders (5th ed.; DSM-5; American Psychiatric Association, 2013) states that the 12-month prevalence of GAD in the United States is 2.9% among adults. Cognitive-behavioral therapy (CBT) is commonly used to manage and minimize the aversive symptoms of GAD; however, studies have found only modest treatment gains when CBT is used alone (Brown et al., 2001).

The present study develops and evaluates the acceptability and effectiveness of a smartphone application for the treatment of GAD. Previous studies have measured client acceptability of smartphone applications (Ainsworth et al., 2013; Pramana et al., 2013), but they have failed to measure the impact of the application on treatment outcomes (e.g., reductions in symptom severity).

This study will compare therapists using their treatment as usual (TAU; typically cognitive behavioral therapy) plus inclusion of the smartphone application (TAU+app) to two alternative treatment conditions: TAU plus the addition of a paper log for daily assessment of client data (TAU+paper), and treatment as usual alone (TAU).

## Hypothesis

First, I hypothesize that In comparison to both alternative treatment conditions (TAU and TAU+paper), clients in the TAU+app condition will report fewer symptoms of anxiety over time as measured by the Penn State Worry Questionnaire (PSWQ; Meyer et al., 1990) and the GAD-7 (Spitzer et al., 2006) and will report a better working alliance with the therapist (e.g., better quality of communication with therapist and increased engagement in therapy). In addition, therapists will report greater awareness of client progress and difficulties and greater client engagement.

Second, I hypothesize that in comparison to the TAU+paper condition specifically, clients in the TAU+app will show greater rates of compliance with daily assessments, thus providing more data points to be used in psychotherapy, and greater satisfaction with assessment procedures. Also, therapists will rate the TAU+app as more useful in session.

Third, I hypothesize the lower rates of anxiety hypothesized above for the TAU+app condition will be explained by higher assessment compliance rates, increased working alliance, and therapists' increased awareness of client progress and difficulties

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## Method

Approximately 30 patients from a community mental health agency meeting criteria for a primary or secondary diagnosis of GAD will be recruited for the current study.

Each participant will be randomly assigned to one of three treatment conditions. These conditions are defined as:

- (1) clients reporting symptoms on a smartphone application 3 times per day while also receiving treatment as usual (TAU+app),
- (2) clients reporting the same data to be collected in the application but using a paper log instead, while also receiving treatment as usual (TAU+paper), and
- (3) clients only receiving treatment as usual (TAU).

The smartphone application consists of a rating of the highest level of anxiety during the day (see Figure 1). Following this rating, follow-up questions regarding thoughts, feelings, coping strategies and the effectiveness of these coping strategies are asked. A "History" screen (see Figure 2) compiles the collected ratings and other responses into one detailed progression chart to be used with the therapist in the therapy session reviewing the client's successes and failures. The paper report (see Figure 3) consists of the same questioning but in a physical paper format.

All participants will complete dependent measures of anxiety, depression, global functioning and therapeutic alliance on a weekly basis during the 6 weeks of the study. In addition, the study will test mediation of the treatment effect through enhanced therapist-client communication, therapeutic alliance, and treatment compliance, which also will be measured during the six-week treatment period. Dependent and mediating variables will be measured again at week 10 to determine any lasting effects of the intervention.

Figure 1. Example of Smartphone Application Initial Screen

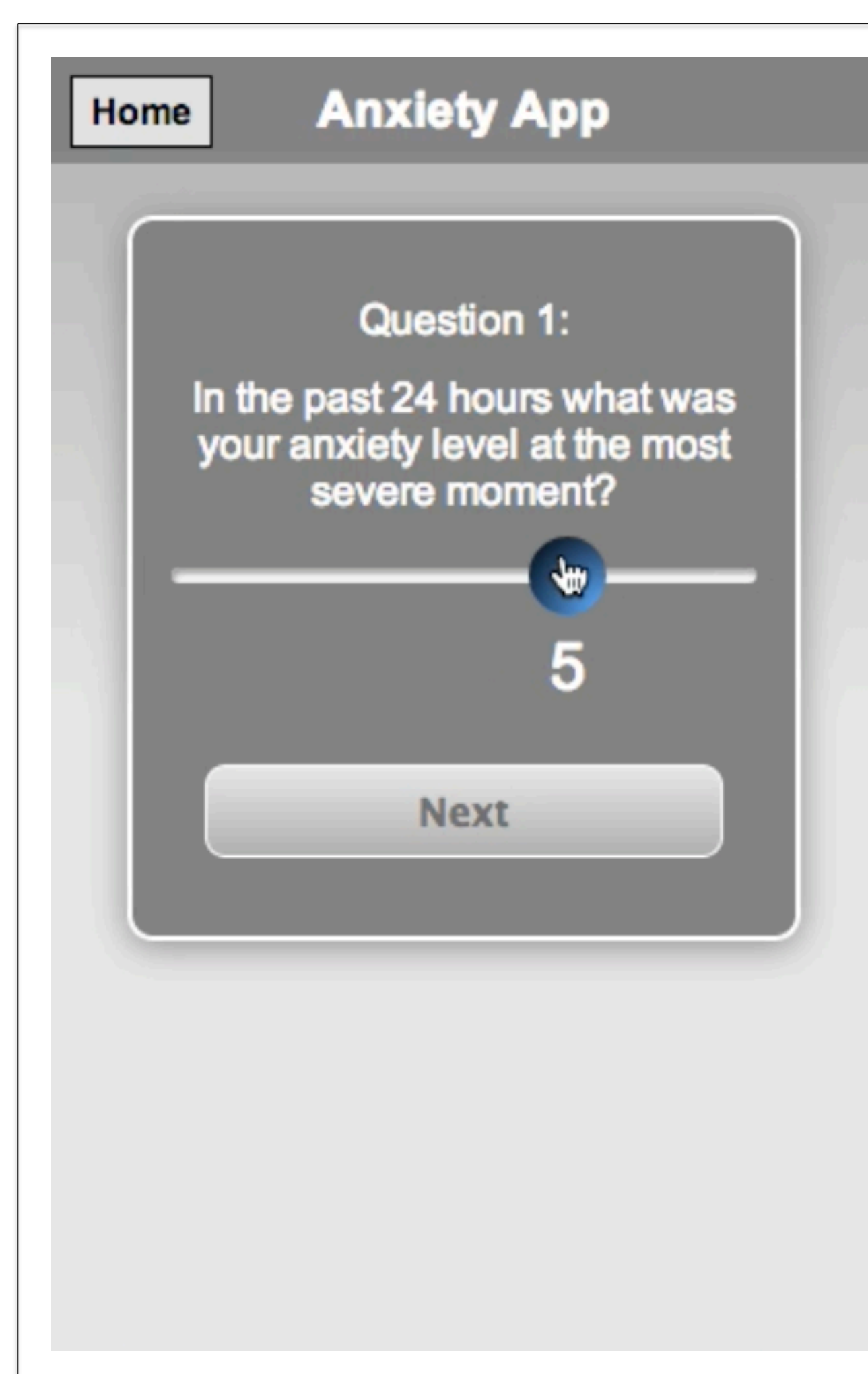


Figure 2. Example of Smartphone Application History Screen

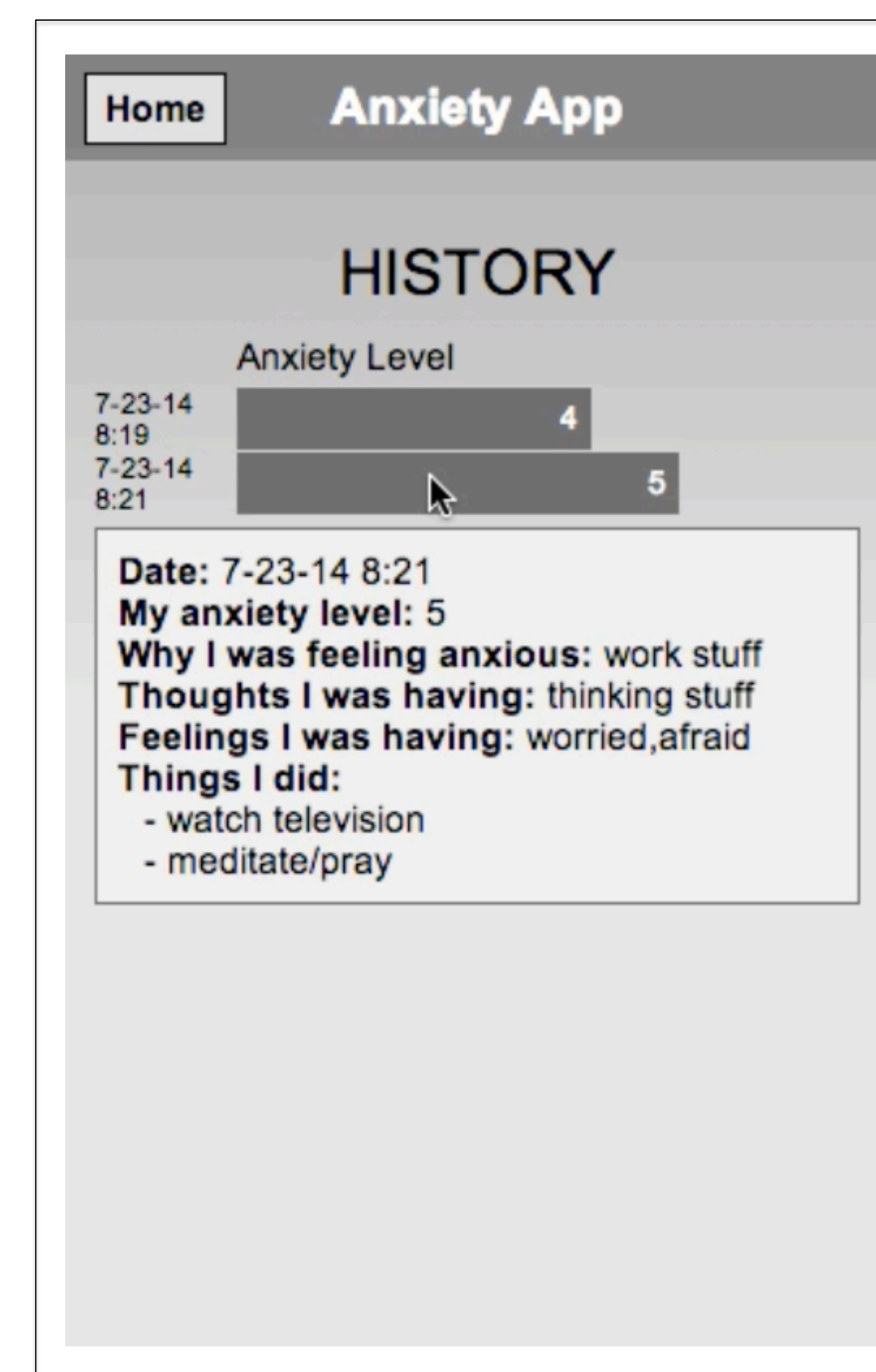
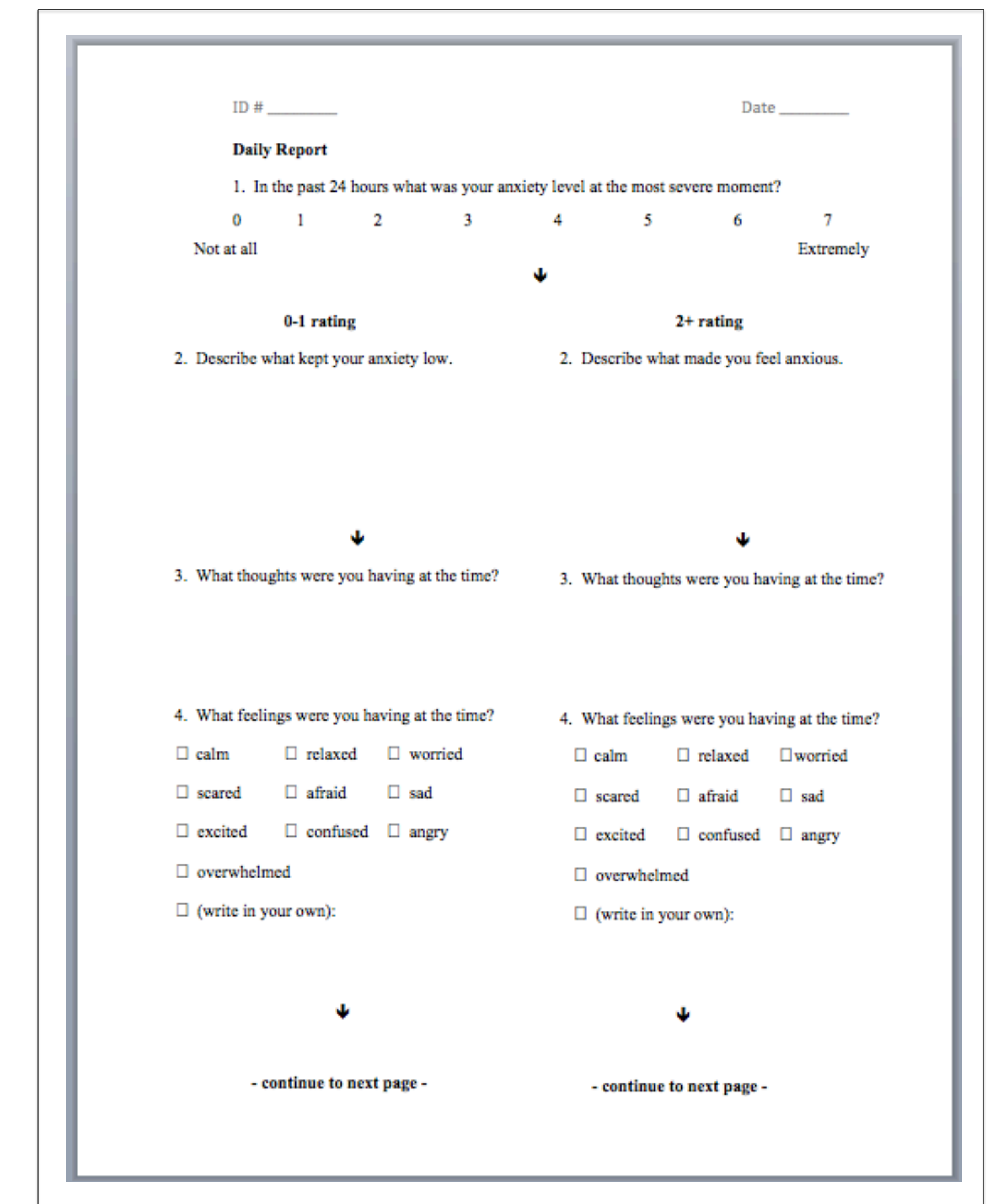


Figure 3. Example of Portion from Paper Log



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