

*EVALUATING THE DURATION OF THE
COMPETING RESPONSE IN HABIT REVERSAL:
A PARAMETRIC ANALYSIS*

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The effectiveness of habit reversal was compared across three different competing response (CR) durations. Results showed that 1-min and 3-min CR durations were associated with short-term and long-term increases in nail length for people who bit their nails. A 5-s CR duration produced immediate increases in nail length that were not maintained. Social validity data were consistent with these findings.

DESCRIPTORS: competing response, habit reversal, nail biting, oral-digital habits

Habit reversal is effective for reducing various topographies of repetitive behavior such as motor tics, hair pulling, and oral-digital habits. Recent literature reviews have suggested that the competing response (CR) component, in which a person learns to engage in a physically incompatible behavior contingent on the repetitive behavior or its antecedents, is primarily responsible for the efficacy of habit reversal (Miltenberger, Fuqua, & Woods, 1998). Although Azrin and Nunn (1973) originally proposed a 3-min duration for the CR, shorter durations have been effective (e.g., 1 min; Woods et al., 1999). However, this parameter has not been systematically evaluated. Such an evaluation is needed to determine the duration that produces the greatest, most durable change in behavior. Furthermore, habit reversal may be more acceptable to clients and associated with greater treatment compliance if brief CRs are used. The present study compared treatment effectiveness and acceptability of 3-min, 1-min, and 5-s CRs as part of habit reversal for nail biting.

METHOD

Participants

Twelve adult nail biters (4 men and 8 women) received extra credit in university

psychology courses for their participation. Each eligible participant had (a) to bite his or her nails for more than 4 weeks, (b) to bite his or her nails more than five times per day, and (c) to experience physical symptoms (e.g., bleeding) or social impairment (e.g., hiding hands from others) as a result of the biting.

Data Collection

Measurements (in millimeters) of all participants' fingernails (from the base of the nail to the highest point on the tip of the nail) were taken one to three times per week throughout the entire study and once at the 3-month follow-up by trained research assistants. For each measurement, a mean nail length was calculated across all 10 nails. Interobserver agreement was not obtained for the nail-length measure.

Two social validity measures were also used. First, 10 psychology students, blind to treatment condition, viewed pretreatment, posttreatment, and follow-up photographs of the participants' hands presented in random order. For each photograph, the raters completed a three-item questionnaire that asked about (a) nail damage, (b) perceived problem for the person in the photo, and (c) need for treatment of nail biting. Each item was rated on a 7-point Likert-type scale with higher numbers reflecting greater social va-

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lidity. The mean score for each question was calculated across both hands to yield separate scores for pretreatment, posttreatment, and follow-up. At the end of the study, participants also completed a seven-item treatment acceptability questionnaire. Each item was rated using a 5-point Likert-type scale with summed scores over 20 indicating acceptability of the intervention.

Procedure

Treatment and data collection took place in a small (2 m by 5 m) room. Participants were semirandomly assigned to one of three groups. The 4 participants in each group received treatment within a multiple baseline across subjects design. Procedures for habit reversal were similar to those described by Woods and Twohig (2001). Treatment, which consisted of awareness training, CR training, and social support, was implemented in an initial 1-hr session with two additional 30-min booster sessions occurring each week following the initial session (a more complete description of the procedure is available from the second author upon request). The only difference between the three groups was the duration of the CR. Participants were asked to engage in the CR for either 3 min, 1 min, or 5 s.

RESULTS AND DISCUSSION

All participants in the 3-min group showed consistent increases in nail length after the initial training, and these increases were maintained at the 3-month follow-up (Figure 1). As a group, the mean pretreatment, posttreatment, and follow-up nail lengths were 8.9 mm, 9.7 mm, and 11.7 mm, respectively. Participants in the 1-min group showed similar short-term and long-term increases in nail length after the initial training, although these results were less clear for P5 (Figure 1). As a group, the mean pretreatment, posttreatment, and follow-up

nail lengths were 8.9 mm, 10 mm, and 9.9 mm, respectively. Two participants in the 1-min group either requested and were granted permission to cut the nails (P6) or did so without permission (P7) prior to follow-up (at points indicated on Figure 1). All participants in the 5-s group except P12 showed increases in nail length, but these effects were not maintained at follow-up (Figure 2). The mean pretreatment, posttreatment, and follow-up nail lengths were 10.5 mm, 11.8 mm, and 10.7 mm for P9, P10, and P11, respectively. P12 was the only participant in the 5-s group to show improvement at follow-up. Upon questioning, this participant reported that she had extended the prescribed CR time from 5 s to 1 min because she found it to be more helpful in decreasing the nail biting. Thus, her follow-up data were excluded from the social validity analyses.

The pretreatment photo ratings for the 1-min and 3-min groups were much lower than posttreatment and follow-up ratings. Although the ratings of the photos for the 5-s group were lower at pretreatment than at posttreatment, the pretreatment ratings did not differ from those at follow-up. These data are consistent with those on nail length. Treatment acceptability data indicated overall acceptance of the three CR durations, but the longer durations were rated as less acceptable than the shorter durations (social validity data are available from the second author).

In general, results showed that habit reversal with a 5-s CR produced only short-term gains, whereas habit reversal with CR durations of 3 min or 1 min produced both short- and long-term gains when applied to nail biting. These findings suggest that clients should be taught to engage in a CR of at least 1 min because shorter durations (e.g., 5 s) may negatively affect maintenance. Future research is needed on the effects of the 5-s CR and on possible strategies for

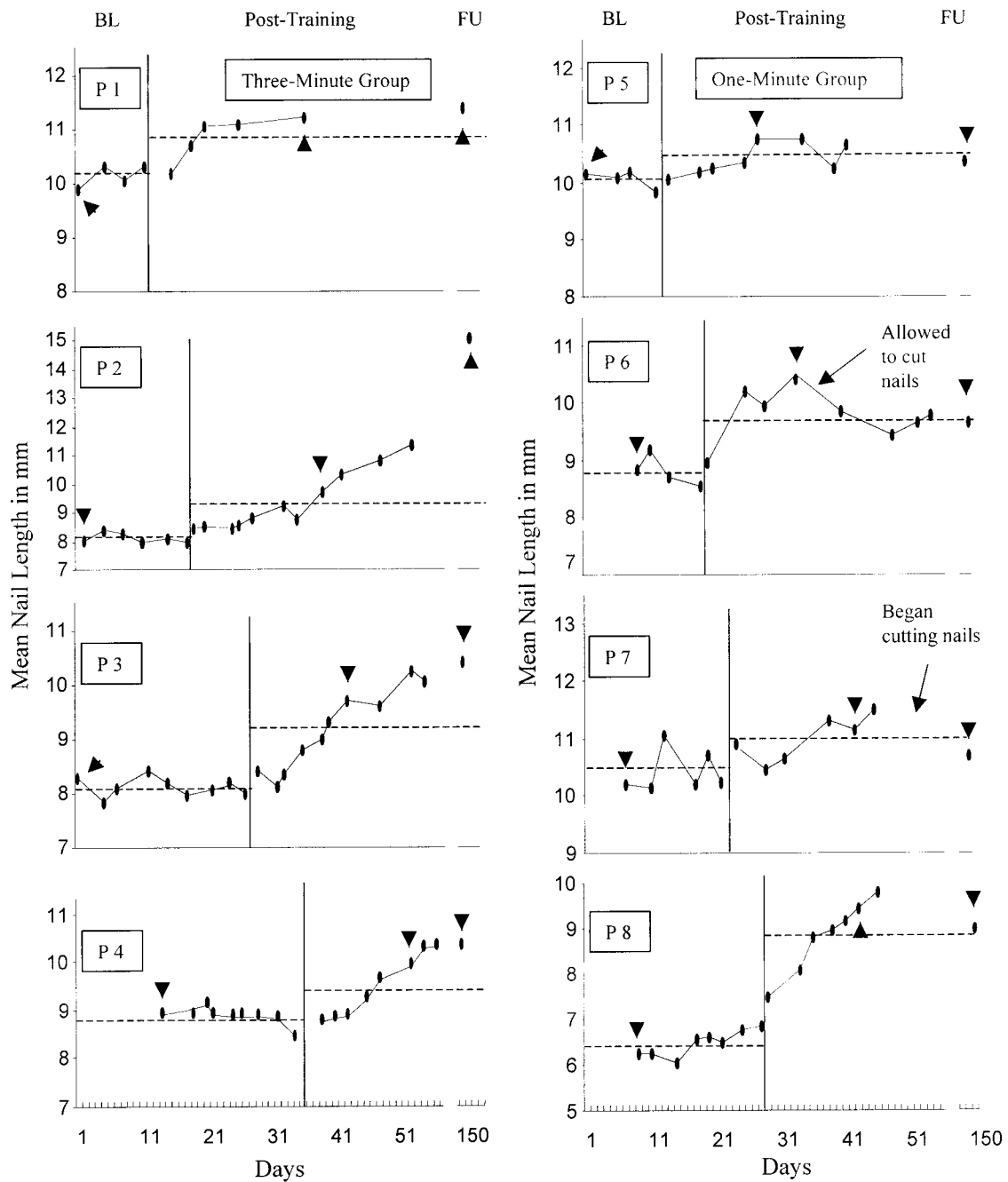


Figure 1. Nail length (in millimeters) for participants who received habit reversal with a 3-min (left panel) and 1-min (right panel) competing response. Dark triangles indicate when photographs were taken. BL = baseline, FU = follow-up.

maintaining the short-term gains found with such a brief CR. This is important because CRs of shorter durations may increase treat-

ment compliance and acceptability (Friman & Poling, 1995).

The study also has several limitations.

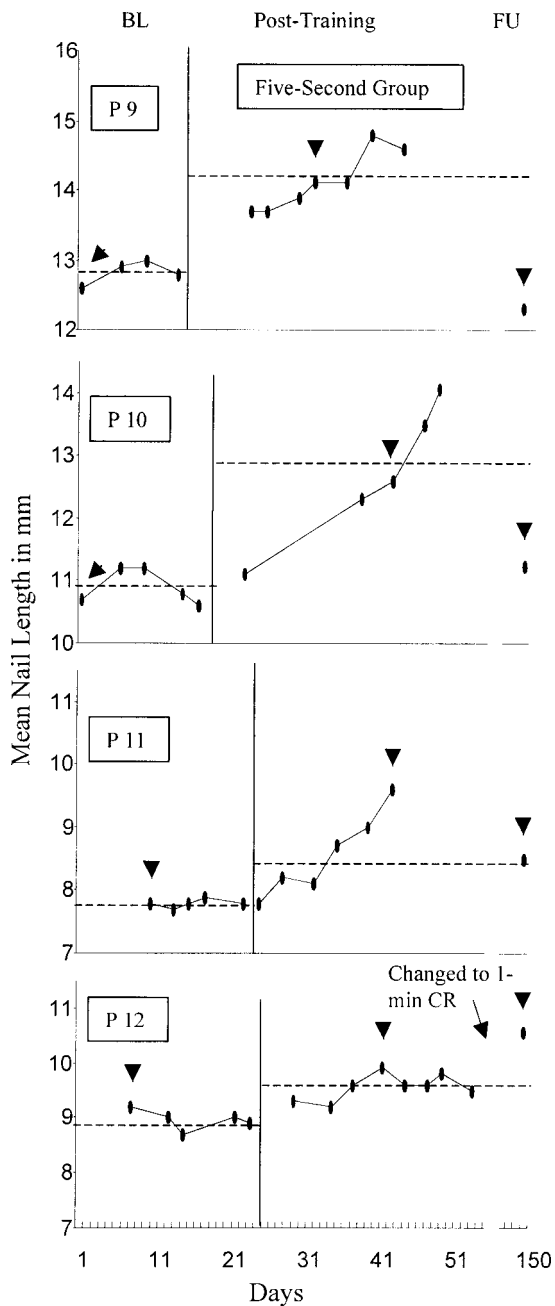


Figure 2. Nail length (in millimeters) for participants who received habit reversal with a 5-s competing response. Dark triangles indicate when photographs were taken. BL = baseline, FU = follow-up.

First, the groups were not matched in terms of gender, pretreatment nail length, and other potentially important factors. Second, results may have limited generality to other

types of repetitive behavior. Third, data on nail biting were collected via outcome recording. Although previous research has demonstrated a negative relation between nail length and biting frequency (Horan, Hoffman, & Macri, 1974), a more direct measure of the behavior would have strengthened the validity of the findings. Fourth, interobserver agreement data were not collected on the nail-length measure. Finally, treatment integrity data were not collected, although all participants were required to correctly display the assigned CR durations during treatment. Further parametric analyses of the CR duration should be conducted with other repetitive behaviors to correct the limitations of the present study.

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