



Pergamon

Research in Developmental Disabilities  
23 (2002) 285–292

---

---

Research  
in  
Developmental  
Disabilities

---

---

## Effects of single and repeated shock on perceived pain and startle response in healthy volunteers

Pieter C. Duker<sup>\*</sup>, Hanske Douwenga, Sonja Joosten,  
Thea Franken

*Psychology Laboratory A 5.04, University of Nijmegen and Plurijn Foundation,  
P.O. Box 9104, 6500 Nijmegen HE, Netherlands*

Received 23 July 2001; received in revised form 3 March 2002; accepted 26 March 2002

---

### Abstract

Contingent shock (CS) has been used in a number of studies to suppress health-threatening self-injurious behavior of individuals with mental retardation and autism. As sustained suppression is an issue of concern, research into procedural variables of CS is needed. In this study, clinical evidence was used to infer a variable that might be of relevance for the application of clinical contingent shock, that is, to assess the effect of single versus repeated shock at a specific location on the body. With pain intensity and startle response as dependent variables, shocks were administered to 48 healthy volunteers. Electric shocks were identical to those that used in clinical practice. The second shock in succession to the same location of the body produced higher pain intensity ratings than the first shock and that the third shock in succession to the same location of the body produced higher pain intensity ratings than the second shock in succession. Startle responses, however, failed to be affected in this direction. The latter result is consistent with a previous study. Our data suggest that repeated shock to the same location is likely to be more effective to establish suppression than repeated shock to different locations.

© 2002 Elsevier Science Ltd. All rights reserved.

*Keywords:* perceived pain; startle response; healthy volunteers; contingent shock

---

<sup>\*</sup> Corresponding author. Tel.: +31-24-361-28-22; fax: +31-24-361-27-76.

*E-mail address:* p.duker@ped.kun.nl (P.C. Duker).

## 1. Introduction

The effect of contingent shock (CS) as treatment for self-injurious and other dangerous behaviors (e.g., von Heyn, Israel, & Worsham, 1993) with individuals with mental retardation and autism has been evaluated in slightly more than 50, predominantly single-subject studies (for a meta-analysis, see Didden, Duker, & Korzilius, 1997). Recently, we compared a control group ( $n = 8$ ) with a matched treatment group ( $n = 8$ ), demonstrating a strong long-term effect of CS with individuals with mental retardation and autism exhibiting life-threatening self-injurious behaviors (Duker & Seys, 2000).

The operation of CS refers to establishing an association between the stimuli that are related to the target response (i.e., the self-injurious response) on the one hand and the perception of the electric shock on the other hand. This association involves processes of classical conditioning and avoidance learning. Whilst the initial effect of such a contingency is often rapid suppression of the target response, the maintaining effects of CS are determined by a number of procedural variables that are still largely unknown.

The variables that control the aversive sensation of *clinical* electric stimuli are still largely undetermined. This situation may be due to the fact that the current (mA) of electric shocks that is used in clinical practice is much higher than the current of shocks that is used in laboratory settings, limiting generalizations beyond such studies. Research on clinical electric shock has shown that a number of variables are unrelated to the aversive sensation of shock, such as focusing versus distracting participant's attention to the shock (Duker, van den Bercken, & Foekens, 1999), personality trait of the recipient of shock (i.e., introversion vs. extroversion) (Duker, Immel, Kros, & van den Bercken, submitted for publication), interval between announcement of the shock and actual administration of it, and induced fear (Duker et al., submitted for publication).

As sustained suppression of the target behavior when using CS is an issue of some concern (see Ricketts, Goza, & Matese, 1993; Williams, Kirkpatrick-Sanchez, & Iwata, 1993), further research into procedural variables of CS is necessary. As a measure to circumvent or to restore this loss of suppression, Israel (2000) suggested alternating the location of the body to which the electric shock is administered by using multiple electrodes. This method is established by having the individual wear two (or more) devices, which are then alternately activated by the therapist. It is predicted that the first shock to a specific location on the body produces a stronger effect than the second one, while the latter produces a stronger effect than the third one, etc. It is assumed that a stronger effect produces stronger suppression, resulting in less damage to the body for those who show self-injurious behavior.

The present study focused on this issue, using up to three shocks in a row, a number which is clinically relevant. Specifically, we were interested whether responding to electric shocks differs as to the relative position of the shock in a sequence.

متن کامل مقاله

دریافت فوری ←

**ISI**Articles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات