MODIFYING HOW PEOPLE SMOKE:
INSTRUCTIONAL CONTROL AND
GENERALIZATION¹

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The modification of smoking behavior usually involves the target goal of total abstinence. However, many smokers are unable or unwilling to quit completely. An alternative is to teach people to smoke in ways that minimize the associated health risks. Such an approach would involve decreasing smoking rate, switching to "safer" tobacco products, and modifying the topography of consumption. Previous research has shown that topographical components of smoking behavior such as puff frequency, puff duration, cigarette duration, and amount smoked can be reliably measured and experimentally manipulated (Frederiksen, Miller, and Peterson, *Addictive Behaviors*, 1977, 2, 55-61). Further, there is preliminary evidence from a single-subject experiment that topography can be changed in clinically relevant directions and that such changes can generalize to the smoker's natural environment (Frederiksen and Simon, *Behavior Therapy*, in press). To replicate and extend these findings, three single-subject experiments were conducted. In each experiment, verbal instructions to modify individual components of smoking topography were sequentially introduced using a multiple-baseline design across components. The components of puff frequency and puff duration were modified in three experiments. Cigarette duration was also modified in two experiments. Following the topography change phase, daily smoking rate was stabilized, using a behavioral contracting procedure (Frederiksen, Peterson, and Murphy, *Addictive Behaviors*, 1976, 1, 193-196). Generalization was assessed during sessions in which no instructions were given (Subjects 1 and 3) and at six monthly followups (Subjects 2 and 3). For Subjects 2 and 3, data were also available on the amount of carbon monoxide (CO) uptake associated with the consumption of a cigarette (postcigarette CO-precigarette CO). This physiological measure is important because CO and its byproducts constitute a major health risk (Russell, *Lancet*, 1974, 1, 254-258). Results showed that instructions were effective in modifying components of smoking topography. These changes generalized to sessions in which no instructions were given and across six months of follow-up. Daily smoking rate did not increase during topography change nor did smoking topography deteriorate when smoking rate was subsequently stabilized on a behavioral contract. Subjective ratings of smoking enjoyment decreased during topography change for two of three subjects but subsequently returned to baseline levels during followup. The observed topography changes were associated with a decrease in the amount of each cigarette smoked. Mean CO uptake was also reduced from baseline levels of 6.0 ppm and 8.0 ppm (Subjects 2 and 3, respectively) to followup levels of 3.3 ppm and 2.1 ppm. These results replicate and extend previous work and suggest that moderate or "controlled" smoking is an approach that deserves continued attention. The impor-

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tance of assessing smoking topography and physiological variables, as well as directions for subsequent investigation, are discussed.

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