Overcorrection: Reviewed, Revisited and Revised

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Overcorrection is a widely used behavior management procedure, the success of which has been well documented. However, overcorrection is not a simple, single procedure. Rather, it is a complex combination of procedures that often make it a complicated strategy to understand conceptually and to implement correctly. The complex nature of overcorrection combined with the use of multiple labels has created much confusion and debate among both researchers and practitioners. A number of issues relating to overcorrection are examined and evaluated. A proposal is made for revising the present overcorrection terminology. Finally, directions for future research are suggested.

Key words: overcorrection, punishment, positive practice, restitution training, terminology

Overcorrection has been reviewed frequently since Foxx and Azrin first described the procedure in the early 1970's (Foxx & Azrin, 1972, 1973). Overcorrection is a widely used treatment technique that has been applied successfully to a variety of responses (Foxx, 1977; Halpern & Andrasik, 1986; Singh & Singh, 1986; Trott & Maechtle, 1986) and with a variety of people (Barton & Lagrow, 1983; Crowley & Armstrong, 1977; Doke & Epstein, 1975; MacFarlane, Young, & West, 1987). The procedure has been used both to decrease or eliminate inappropriate behavior (Azrin & Foxx, 1971; Maag, Rutherford, Wolchik, & Parks, 1986; Singh, Watson, & Winton, 1986) and to increase appropriate behavior (Hinerman, Jenson, Walker, & Peterson, 1982; Stewart & Singh, 1986).

Bates and Wehman (1977) (cited in Axelrod, Brantner, & Meddock, 1978) reported that, between 1971 and 1975, 20% of the behavior modification procedures directed at reducing the behavior of people with mental handicaps used some form of overcorrection procedure. Over 50 published reports of overcorrection appeared in the applied behavior analysis literature between 1972 and 1980 (Marholin, Luiselli, & Townsend, 1980).

The authors of this paper identified an additional 31 studies of overcorrection published between 1981 and 1988. Despite its widespread use and apparent effectiveness, overcorrection has generated considerable controversy.

Overcorrection Reviewed

Critics of overcorrection have raised a number of concerns regarding the application of the overcorrection procedure. These include the complexity of the procedure, the number of possible procedural variations, the use of multiple labels, and the maintenance and generalization of behavior change (Foxx, 1978; Foxx & Livesay, 1984; Luiselli, 1980; Ollendick & Matson, 1978). There is also concern that many of the studies reporting overcorrection procedures contain serious methodological flaws in that they have failed to demonstrate functional control of the overcorrection procedure over behavior (Marholin et al., 1980; Murphy, 1978). Finally, overcorrection interventions often require more staff time and effort than other behavior reduction procedures and there are conflicting results regarding staff attitudes towards overcorrection (Axelrod et al., 1978; Johnson & Baumeister, 1981).

Despite the fact that these and similar concerns have been raised for the past 10 years, overcorrection terminology and methodology remain largely unchanged with many of these questions and concerns unresolved. Three reviewers recommended changes in overcorrection terminology in an effort to resolve some of the confusion surrounding this procedure (Foxy & Bechtel, 1982, 1983; Miltenberger & Fuqua, 1981; Singh & Bakker, 1984).

The purpose of the present paper is: (1) to discuss the relationship of overcorrection to the punishment process; and (2) to propose a change in terminology related to the overcorrection procedure. The proposed change in terminology will reduce some of the confusion surrounding the procedure. As a result, treatment alternatives will be easier to describe, implement and evaluate.

Overcorrection Revisited

Overcorrection and the punishment process. In 1972, Foxy and Azrin developed a procedure called restitution which they believed to be an alternative to traditional punishment procedures. Restitution required the subject to restore the disturbed situation to a greatly improved state. The purpose was to teach the offender to assume individual responsibility for the disruption caused by the misbehavior (Foxy & Azrin, 1972).

In a later study, Foxy and Azrin (1973) expanded the restitution procedure to provide a distinction between restitution and positive practice, both of which became components of a procedure they now referred to as overcorrection. The purpose of the overcorrection procedure was to overcorrect the environmental effects of an inappropriate act (restitutional overcorrection) and to require the disruptor to practice correct forms of relevant behavior (positive practice overcorrection). Positive practice overcorrection is employed instead of restitutional overcorrection when no environmental disruption is created by a misbehavior (Foxy & Azrin, 1973). Thus, the procedures can be used singly or in combination.

Since these original two articles, there continues to be controversy regarding how, and if, overcorrection relates to the punishment process, the original assumption being that it differed somehow from other punishment procedures (Foxy & Azrin, 1972, 1973). Although some authors appear reluctant to classify overcorrection as a punishment procedure (Azrin & Besalel, 1980, 1981), most now agree that overcorrection is indeed a punishment procedure (Axelrod et al., 1978; Foxy, 1982; Foxy & Bechtel, 1982, 1983; Miltenberger & Fuqua, 1981). For example, Foxy (1982) defined overcorrection as "a Type 1 punishment procedure in which the misbehaving student is required to overcorrect the environmental effects of her misbehavior and/or to practice appropriate forms of behavior in those situations in which the misbehavior commonly occurs" (p. 91). Moreover, Foxy (1982) ranked overcorrection as a Type 1, Level 3 punishment procedure along with all of the other most restrictive procedures in his Least Restrictive Treatment Model.

Thus, most researchers and critics now tend to agree with the contention that overcorrection is a punishment procedure (Axelrod et al., 1978; Foxy, 1982; Foxy & Bechtel, 1982, 1983; Miltenberger & Fuqua, 1981) and the question of whether and how overcorrection relates to the punishment process should no longer be an issue.

The educative value of overcorrection. Originally, Foxy and Azrin (1972, 1973) suggested that, because of its "educative value," overcorrection differed from other punishment procedures in that it served to educate or re-educate the misbehaving person in appropriate behavior. This belief is still held today (e.g., Kazdin, 1989).

One way to determine whether overcorrection is, in fact, educative in nature is to examine the studies, including reports of data on the practiced appropriate behavior, to determine whether or not there are increases in appropriate behavior as a direct result of the application of the overcorrection procedure. If such data do not exist, then overcorrection can be said to function like any other punish-

ment procedure, that is, to decrease or eliminate problem behavior (Miltenberger & Fuqua, 1981). Nevertheless, even if such data do exist, it would not necessarily indicate that overcorrection is any more educative than other punishment procedures that result in increases in appropriate behavior.

Most of the researchers reporting improvement in appropriate behavior as a result of the application of an overcorrection procedure have based their claims for this effect on anecdotal data. For example, some researchers anecdotally reported improved compliance in their subjects (Azrin & Powers, 1975; Duker & Seys, 1977; Matson & Stephens, 1977; Matson, Stephens, & Smith, 1978) and some researchers anecdotally reported improvements in the practiced overcorrection response (Azrin & Wesolowski, 1975; Foxx, 1977; Foxx & Martin, 1975; Matson & Stephens, 1977). Researchers reporting empirical data on improvement in appropriate responses have produced conflicting results. While four researchers documented increases in appropriate behavior (Barton & Osborne, 1978; Carey & Bucher, 1981; Foxx, 1976, 1977), three researchers reported little or no change in appropriate behavior (Ollendick, Shapiro, & Barrett, 1981; Roberts, McSween, Desmond, & Iwata, 1979; Shapiro, Barrett, & Ollendick, 1980), and two researchers reported variable results with one subject showing moderate increases in performance and one subject showing no increase in performance (Wells, Forehand, & Hickey, 1977; Wells, Forehand, Hickey, & Green, 1977). Thus, the results for this effect appear to be mixed.

In light of the total number of overcorrection studies conducted and the disparity of these results, the claim for the educative value of the overcorrection procedure has yet to be established. Miltenberger and Fuqua (1981) agreed that the claims for the educative function of overcorrection cannot be supported. Foxx and Bechtel (1982, 1983) concurred and suggested that the original selection of the term "educative" was unfortunate. They also suggested that, because of the con-

fusion and the lack of data in support of overcorrection's educative function, the use of the term "educative" to describe overcorrection now be discontinued (Foxx & Bechtel, 1982, 1983).

Regardless of what the data on the "educative" effects of overcorrection show, it is also important to determine whether overcorrection differs from other punishment procedures in terms of its educative nature. To the extent that "to educate" simply means "to teach," all punishment procedures do the same thing—they teach the student what not to do. Moreover, any good clinician or practitioner would not design a program aimed solely at decreasing inappropriate behavior without simultaneously increasing a positive, usually incompatible, appropriate one (Azrin & Holz, 1966; Evans & Meyer, 1985; Forehand & Baumeister, 1976; Forehand & McMahon, 1981; Sulzer-Azaroff & Mayer, 1977). Effective behavior change programs always contain two essential elements, teaching the client not only "what not to do" but also "what to do." Thus, all punishment procedures may be considered "educative" to some extent.

There is a second point in support of the contention that overcorrection is no different from other punishment procedures on this dimension. Some studies employing punishment procedures other than overcorrection have also reported increases in appropriate behavior as a direct result of the treatment intervention, including the application of shock (Harris & Ersner-Hershfield, 1978). However, unlike overcorrection, these procedures have never been considered educative in the applied behavior analysis nomenclature.

Thus, despite claims to the contrary (Azrin & Besalel, 1980, 1981), as originally proposed by Foxx & Azrin (1972, 1973) the educative value of overcorrection has not yet been empirically substantiated. At the very least, researchers have produced conflicting results. Moreover, overcorrection at this point, appears to be no different from other punishment procedures in terms of its educative nature.

The least restrictive treatment alternative. Recently, there has been a move towards selecting nonaversive behavior management strategies as reductive treatment techniques when dealing with mentally and multiply handicapped or behaviorally disordered individuals (LaVigna & Donnellan, 1986). Overcorrection has been ranked as a Type 1, Level 3 punishment procedure (Foxy, 1982) which has the potential of being intrusive and aversive in nature, especially in cases that involve extended application and/or manual guidance. As well, because it is such a complicated procedure, the potential exists for misuse and abuse. Yet, it remains a very popular technique particularly with multiply and mentally handicapped students.

Of greater concern than using an aversive procedure to decrease behavior is the use of an aversive procedure to teach or improve behavior. For example, overcorrection has been used to teach eye contact (Foxy, 1977) and sign language (Hinerman et al., 1982; Linton & Singh, 1984); and to improve attendance (Foxy, 1976) and academic behavior (Carey & Bucher, 1981; Foxy & Jones, 1978; Ollendick, Matson, Esveldt-Dawson, & Shapiro, 1980; Singh, 1987; Singh & Singh, 1984, 1986; Stewart & Singh, 1986).

In view of the move toward nonaversive behavior management, behavior analysts have an ethical and moral obligation to ask themselves whether they should be using a Type 1 punishment procedure to *teach* or increase appropriate behavior (Miltenberger & Fuqua, 1981).

Social validity of overcorrection. It has become increasingly important for researchers and practitioners not only to select and apply empirically valid behavior change strategies but also to ensure that those procedures are acceptable and palatable to other researchers, practitioners and lay people (Kazdin, 1977; Van Houten, 1979; Wolf, 1978). Yet, little systematic research has been conducted regarding the social validity of overcorrection. Again, most of the information regarding the acceptability of overcor-

rection as a treatment technique has been anecdotal in nature. For instance, reports that staff find overcorrection more acceptable and preferable to other procedures have been noted anecdotally in Clements and Dewey (1979), Foxy (1976), and Foxy and Martin (1975). Matson, Horne, Ollendick, and Ollendick (1979) used overcorrection in the treatment of 20 young children exhibiting disruptive behavior. Self-reports from these children indicated that they preferred overcorrection to other forms of punishment.

A few researchers have systematically gathered data regarding reactions or attitudes towards overcorrection, and again the results are equivocal. In Webster and Azrin (1973) a survey of staff members showed that they preferred the overcorrection procedure over other procedures. Singh, Watson, and Winton (1987) attempted to determine parent's acceptability ratings of various procedures commonly used with mentally handicapped children. In this study, the most acceptable treatment to these parents was not overcorrection but differential reinforcement of incompatible behavior (DRI), followed by overcorrection. Singh and Bakker (1984) reported physical restraint to be more palatable to staff when compared to an overcorrection procedure.

Given the concern over the acceptability of overcorrection and the limited empirical data available, much more attention and systematic research should be conducted regarding the acceptability of overcorrection as a treatment technique. It may be that more restrictive procedures are rated as more acceptable when the behavior is severe. Moreover, support is growing for the position that individuals have a right to the most effective treatment procedure available (e.g., Van Houten, Axelrod, Bailey, Favell, Foxy, Iwata, & Lovaas, 1988).

Maintenance and generalization of response suppression. A number of reviews of overcorrection have previously and adequately assessed the problem of maintenance and generalization of behavior following the application of an overcorrection procedure (e.g., Axelrod

et al., 1978; Marholin et al., 1980; Matson, Ollendick, & Martin, 1979). To summarize the conclusions of these reviews, generalization of treatment effects from one situation to another or one behavior to another appears to be the exception rather than the rule (Marholin et al., 1980). In terms of maintenance of response suppression, some researchers have completely eliminated inappropriate behavior for up to one year following treatment (e.g., Azrin & Wesolowski, 1975; Luiselli, Helfen, Pemberton, & Reisman, 1977) while in some cases the target response has returned to baseline or near baseline levels upon termination of the overcorrection treatment (e.g., Marholin & Townsend, 1978; Martin, Weller, & Matson, 1977).

Foxx and Livesay (1984) presented a retrospective of eight subjects who had been treated successfully by overcorrection 10 years earlier. The results of their analysis indicated that the maintenance of the treatment effect varied widely across subjects with the longest term and best suppression occurring with the highest functioning subjects. These authors concluded that the very nature of overcorrection procedures seemed to make maintenance difficult and they listed several disadvantages specific to overcorrection that contributed to the problem of maintenance. Furthermore, the subtlety and complexity of several of the components of overcorrection and the fact that each overcorrection procedure needs to be individually designed increase the probability that overcorrection may be conducted incorrectly or not at all. Related to staff time, these authors stated that all staff should be individually trained in the procedures, and staff performance should be monitored more frequently than with most other programs. Thus, more staff time is spent on the overcorrection program (often more of the professional's or administrator's time as well). These factors all contribute to the likelihood that an overcorrection program will be abandoned or misused (Foxx & Livesay, 1984).

It appears that the evidence on maintenance and generalization is mixed, with

very little support for the occurrence of generalization or the long term maintenance of response suppression. Experimenters and practitioners should not rely on the spontaneous occurrence of these phenomenon. Rather, as is the case with most behavioral procedures, maintenance and generalization should be programmed directly. Furthermore, as Foxx and Livesay (1984) indicated, there are special factors to consider that are unique to overcorrection that may decrease the likelihood of the long term maintenance of the target behavior.

In summary, overcorrection is a punishment procedure that has not been demonstrated to have "educative" value beyond that of any other punishment procedure. The complexity of overcorrection combined with the use of multiple labels makes it difficult to analyze the social validity and restrictiveness of overcorrection and, as Foxx and Livesay (1984) pointed out, makes maintenance and generalization difficult to achieve.

Overcorrection Revised

The problems caused by the current overcorrection terminology have been recognized and discussed in the applied behavior analysis literature for some time (Foxx & Bechtel, 1982, 1983; Miltenberger & Fuqua, 1981; Singh & Bakker, 1984), yet the terminology has remained unchanged. One solution to the problem is to eliminate the term "overcorrection" completely from the applied behavior analysis vocabulary. The term could be replaced by three separate procedures labelled restitution training, positive practice of functional behavior, and guided movement training. Each of these separate procedures is defined below.

Restitution training is a punishment procedure whereby the misbehaving person, contingent upon misbehavior, is required to restore the environment to *the same or* better condition than it was prior to the misbehavior. Including the words "the same" in the definition would eliminate the need for labels such as self- or simple-correction (Azrin & Besalel, 1980, 1981) and reduce some of the multiple

TABLE 1

A Supplement to Foxx's (1982) Least Restrictive Treatment Model

Level 1	Level 2	Level 3
Positive Practice of Functional Behavior (no manual guidance)	Positive Practice of Functional Behavior (manual guidance)	Guided Movement Training (manual guidance)
Restitutional Training (no manual guidance)	Restitutional Training (manual guidance) Guided Movement Training (no manual guidance)	

labels associated with overcorrection. An example of this procedure would involve having a person who has upturned tables and chairs in a lunchroom return the tables and chairs to their original positions and clean up anything that has been spilled on the floor.

Positive practice of a functional behavior is a punishment procedure whereby the person is required, contingent upon the misbehavior, to repeatedly practice a positive, *functional*, and, if possible, incompatible behavior. A behavior is considered functional if it serves a useful purpose for the individual engaging in the behavior. This procedure would not include the repeated practice of essentially non-functional behavior such as repeated movement of arms or head. An example of this procedure would be having someone who has urinated in his clothing practice walking to the bathroom from 10 different locations in the house. In addition to learning *not* to urinate in his clothing, this person is learning how to find the bathroom from various locations in the house.

Guided movement training is a punishment procedure contingent upon misbehavior whereby the misbehaving person is required to engage in some repeated, incompatible gross motor movement or exercise. The movement or exercise is considered non-functional in that it does not serve any useful function to the person if performed outside the situation. Autism reversal (Azrin, Kaplan, & Foxx, 1973) and habit reversal (Azrin, Nunn, & Frantz-Renshaw, 1980) would be included in this category, thus

further reducing the need for multiple labels. An example of this procedure would be manually guiding a person to move her arms over head, out from her body parallel to the floor, and down at her sides for 2 minutes immediately following an instance of finger flapping.

There is a common element to each of these three procedures. They are all applied contingent upon misbehavior with the purpose being to decrease that behavior. Thus, they can all be considered punishment procedures with potentially varying degrees of aversiveness. Table 1 presents a supplement to Foxx's (1982) Least Restrictive Treatment Model incorporating these three separate procedures in place of the overcorrection procedure. Each of the three procedures may be implemented with or without manual guidance, as indicated in the table. Restitutional training and positive practice of functional behavior without manual guidance have been included under Level 1 since they are the least intrusive procedures. Positive practice of functional behavior, restitution training with manual guidance, and guided movement training without manual guidance have been included under Level 2. Positive practice of functional behavior and restitution training with manual guidance are potentially more intrusive because of the manual guidance component, and guided movement training without manual guidance serves only to decrease undesirable behavior without including practice of functional behavior. Guided movement training with manual guidance is ranked as a Level 3 procedure

since it does not include practice of functional behavior and with the manual guidance component is potentially more intrusive than the Level 2 procedures.

Advantages of revised terminology. There are a number of advantages in clarifying overcorrection. First, simplifying the terminology will enhance communication by reducing the confusion caused by using the same term for different procedures. Currently, it seems that any one of a large number of procedures can be called overcorrection. For example, one study using only a verbal reprimand (Rusch, Close, Hops, & Agosta, 1976) and two studies using physical restraint alone (Freeman, Moss, Somerset, & Ritvo, 1977; Marholin & Townsend, 1978) incorrectly labelled the procedure used as overcorrection. These studies included only some components of what is currently labelled overcorrection, pointing out some of the difficulties associated with using a single label to describe such a complex set of procedures.

A second advantage is that dividing overcorrection into three separate procedures will enhance control over the independent variable. Currently, because overcorrection involves the use of a number of procedures, including verbal reprimand, time-out, negative reinforcement, positive practice, and restitution, it is frequently impossible to determine which of these components, if any, is the active ingredient in the overcorrection package. Dividing overcorrection into three separate procedures may allow for better control, identification of potent aspects of the procedure, and ease of implementation. In addition, it would now be possible to compare the effectiveness of the three procedures to each other and to other punishment procedures.

The final advantage is that overcorrection has been divided into three procedures with varying degrees of intrusiveness. This makes it easier for practitioners to determine with greater accuracy, the level of intrusiveness of the procedure they are using. This new classification scheme may serve to aide legal and ethical application.

Future Directions

Although the proposed changes resolve some of the difficulties associated with overcorrection, many still remain. In the future, researchers should continue to evaluate the minimal duration and/or intensity of positive practice of a functional behavior, guided movement training, and restitutional training necessary to ensure maximum effectiveness. What levels of restitution over and above "restoring the environment to its original state" makes restitution most effective? Are there consistent guidelines that practitioners in the field can employ to determine when the environment is restored to a condition "better" than it was? While some authors deliver positive reinforcement during positive practice (e.g., Carey & Bucher, 1986), others (Foxy & Bechtel, 1982, 1983) suggest it is not only inappropriate but may actually increase inappropriate behavior. Researchers should systematically investigate the effects of reinforcing correct performance during the positive practice procedure.

Comparisons should be made among the three procedures proposed in this paper and other procedures designed to decrease behavior. Researchers should investigate techniques for facilitating maintenance and generalization and the effects on collateral behavior especially with respect to the uniqueness of these procedures (Foxy & Livesay, 1984). More information regarding the social validity of each of these procedures is required. Finally, in terms of level of intrusiveness, some of these procedures may now be categorized as nonaversive behavior management strategies. The application of the newly defined positive practice procedure in teaching positive behavior might appear much more palatable than applying the overcorrection procedure as it currently stands.

Summary

This paper examined some of the controversial issues surrounding overcorrection. As indicated by the large number

of published studies, overcorrection is a frequently used, widely applicable, and apparently effective treatment technique. However, as it is currently conceptualized, it is a complex procedure that is frequently misunderstood and misused. A proposal was made (1) to divide overcorrection into three single, distinct procedures: positive practice of a functional behavior, restitutional training, and guided movement training and (2) to eliminate the terms overcorrection and associated labels completely. Simplifying the technology in this way has many advantages including enhancing communication, improving control, and increasing the likelihood that the procedures will be implemented correctly. Finally, in the future researchers should continue to systematically analyze and evaluate each of these procedures, particularly with respect to maintenance and generalization, social validity, and variables influencing effectiveness.

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