Programmed Therapy FOR STUTTERING in Children and Adults

Second Edition

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PREFACE

Some 26 years, later I am still a clinician interested in treating the problem of stuttering. However, now I call myself a clinician-researcher. My major motivation to study stuttering has been my memory as child who stuttered. Fortunately, I received subtle, but helpful speech therapy when I was eight. Consequently, I never did think of myself as person who stuttered, but only somebody with great fear of public speaking which I eventually overcame. The focus of this revised version of the book is still on therapy or treatment (the new word) for people who stutter.

I started in 1964 by trying to develop a therapy program for children and adults based on operant conditioning (Ryan, 1964–1965, 1970, 1971, 1974; Skinner, 1953). Then, thanks to Barbara Van Kirk Ryan, I was involved in the Bridgeport Project (Ryan & Van Kirk, 1974a) for children and adults featuring DAF-Prolongation. Next, I compared four establishment programs with school-age children in the Public School Project (Ryan & Ryan, 1983, 1995b; Ryan & Van Kirk, 1974b). Then I worked on dissemination culminating in the Great Britain Project (Rustin, Ryan, & Ryan, 1981, 1987; Ryan 1985). Finally, in the last 18 years, I have researched the development of stuttering in preschool children in the Preschool Project (Genesis of Stuttering Project) (Ryan, 1992, 1998a, 1999b, 2000) and developed operant treatment programs for them in single-subject design (Wood & Ryan, 2000.

I resolved the problem of reviewing the large body of literature generated in the last 26 years by focussing mostly on my own work and citing data from other sources only when those data were highly related to mine. I wanted to present a coordinated, integrated clinical-research presentation on evaluation and management of stuttering from preschool to old age and the dissemination of that information that will be useful to students, clinicians, clinician-researchers, support groups, people who stutter, and researchers.

I still view stuttering as learned behavior, but I now believe there is a physiological basis to stuttering (Boberg, 1993; Ferrans & Bloom, 1997; R. Ingham, 1998; R. Ingham, Fox, J. Ingham, Zamarripa, Martin, Jerabek, & Cotton, 1996; Moore, 1984; Moore, & Boberg, 1987; Perkins, Kent & Curlee, 1991). The data from many different sources are very persuasive on that point, including my recent research with preschool children (Ryan, 1992, 1998a). However, that new thinking has not changed the treatment much since we do not know exactly how this physiology operates nor how to change it except through behavioral technology (R. Ingham, 1998). The

knowledge of a possible physiological substrate helps one to understand the treatment's relative effectiveness and gives one more patience knowing that one is dealing with a possibly physiologically-generated problem (e.g., Moore, 1984). The physical element of the problem is one that is, fortunately, reversible even at a late age (Van Kirk, 1970).

My approach to treatment has been known alternately as behavior modification or contingency management or operant conditioning or programmed instruction (Bandura, 1969, 1977b, 1986; Catanio & Harnad, 1988; Davey & Cullen, 1988; Dews, 1970; Holland & Skinner, 1961; Honig, 1966, 1977; Kazdin, 1980; Keller, 1974; Modgil & Modgil, 1987; Mowrer, 1988; Skinner 1938, 1950, 1953, 1966, 1969, 1972, 1988, 1989).

Some view the technology and information of operant conditioning as a phase through which they and the profession have passed (e.g., Conture, 1990; Kuhr, 1994; Perkins, 1993; Rustin & Cook, 1995; Siegel, 1998). I find that very unfortunate. Operant conditioning is hardly passé (Ryan & Ryan, 1996). Science is never passé. The law of gravity is not passé. It still stands even after all the these years. The "laws" of operant conditioning are as true now as they were in 1938 and 1974. Replication is the highest level of science (Bordens & Abbot, 1996; Hegde, 1994). Replication, as demonstrated recently by the work of the Inghams and Onslow and their colleagues and others described in Brutten (1993b) stands as strong testimony to the current viability of operant conditioning. Their research is an outstanding replication of the operant principles I first espoused 30 years ago (Ryan, 1970). The tenets and principals are still alive and well and available to students, clinicians, clinician-researchers, and researchers to help them advance the knowledge about the treatment of stuttering.

The main purpose of this book is to call the profession's attention, again, to a systematic, scientific approach to studying and treating stuttering via the strategies of operant conditioning, learning principles, and single-subject research design. This system's major laudable characteristics are measurement, clear description, and organization of treatment steps (programming through establishment, transfer, and maintenance with follow-up), and attention to the importance of providing consequences to determine behavior. Some authorities may still view the installation of fluent speech as only one of the many goals for people who stutter, or it may be the single goal, as I believe. I still find little disagreement among experts that fluent speech for stutterers should be at least one of the goals of therapy (e.g., R. Ingham & Cordes, 1999), if not the main goal. People who stutter themselves have unanimously requested fluent speech (R. Ingham, 1972), although they have not all demonstrated the willingness and continued, hard work required to achieve that goal.

Another purpose of this book is to present the data that we have collected and/or published over the past 30 years in one place for evaluation and comparison. This book may serve as a companion to the clinical program book, *Programmed Conditioning for Fluency* (Ryan & Van Kirk, 1971), or the *Monterey Fluency Program* (Ryan & Van Kirk, 1978), as it has come to be called, and to the book on the development of stuttering (Ryan, 1999b).

I purposely avoided a long introductory chapter on the principles of behavior modification or operant conditioning, because I felt that this information is well presented in many other sources, some of which will be named in the text and listed in

the references. I did not provide an extensive review of stuttering itself for the same reason. Bloodstein (1995), Brutten (1993b), Curlee (1993, 1999), Curlee and Siegel (1997), Guitar (1999), Ham (1990), R. Ingham (1984b), Mower (1988), Peters and Guitar (1991) and Shapiro (1999), among others, have provided extremely comprehensive, excellent recent reviews of those sets of literature.

This book is: (a) a positive statement about viewing stuttering as operant behavior; (b) a demonstration of the excellent, although not perfect, treatment results to be obtained using this system; and (c) a hope for future resolution of the problem of stuttering through widespread treatment based on operant conditioning. One part of this revision is that all of the forms from the *Monterey Fluency Program* (Ryan & Van Kirk, 1978), which heretofore have only been available through workshops, are here. They have replaced the prototypes found in Ryan (1974).

This revision starts with a very brief, simple introductory Chapter I on stuttering and basic principles of operant analysis. Chapter 2 covers the mechanics of charting, counting, and computing stuttering and speaking rates. Chapter 3 describes evaluation with both new data and forms. Chapter 4 is on programming. There are not many new references in this area, because the first ones (e.g., Pipe, 1966) were done so well and explained in other places (e.g., Costello, 1977, 1980, 1982, 1983, 1984; Mowrer, 1988). Chapter 5 highlights the two present major establishment programs, Delayed Auditory Feedback (DAF)-Prolongation and Gradual Increase in Length and Complexity of Utterance (GILCU). Chapter 6 discusses the Transfer and Maintenance Programs and Follow-up along with some related interview and topography data. Chapter 7 presents long-term individual client performances in several programs. Chapter 8 covers the preschool stuttering child. Chapter 9, Training, describes efforts at and results of dissemination through training. Chapter 10 is a summary and evaluation of our efficacy data published over the past years. Finally, Chapter 11 provides conclusions, discussion of problems, and suggests directions for future clinical research. Some may not like this final chapter, but I believe these issues must be faced and resolved, and if I may borrow from Martin Luther King, "If not here, where? If not now, when? If not me, who?" In several chapters I have tried to "set the record straight." I hope readers will not find these offensive or overly egocentric or distracting.

I have used the terms "I" and "we" interchangeably. Most of my research has been done with others such as my students, my colleagues such as Duane Craven, or my wife, Barbara Van Kirk Ryan; hence, the term "we" is appropriate. However, many ideas are exclusively mine and the word "I" better represents the ownership and the responsibility, if I am in error. All of us have strived for the past 36 years to achieve the best, most efficient, effective means of helping people who stutter to speak fluently, to disseminate those procedures through extensive workshops, and to refine the programs.

My thanks to all those who have helped make this book possible: my teachers, Charles Van Riper and George Shames; and my behavioral colleagues, the late Einer Boberg (a very special person who stuttered, a clinician-researcher par excellence, and a wonderful friend and colleague); Duane Craven (who previewed the entire book and suggested many important changes); the late Burl Gray (my colleague for seven years and my friend for life); Deborah Kully; Janis and Roger Ingham; Walter

H. Moore; Donald Mowrer (who also previewed the entire book and suggested many important changes); Mark Onslow; and Ann Packman, to name a few. Thanks to Lena Rustin for the Great Britain project (Rustin, Ryan, & Ryan, 1987) and Richard Shine for extensive follow through on his workshop training in the Monterey Fluency Program. A special thanks must go to my wife-colleague, Barbara Van Kirk Ryan, for the past 24 years and mother of my fourth child, Mathew. She has made many major contributions to this work which I trust I have made clear in the text. I wish also to thank Gail Horn and Jaime Bell who successfully treated client SP described in Chapter 7. I wish also to recognize the efforts of Mark Powers who has been training people in the past few years in the modern operant treatment programs. I also greatly appreciate the many figures done by graphic artist Mike Cap De Ville of the California State University, Long Beach Audio-Visual services. This book was made possible, in large part, by my computer technical advisor, Stan Maerwitz, who, until his untimely death in September, 1999, kept my Macintosh computer humming. Thanks also to those, David Bradley, Stafford Cox, and Walter Moore, who provided extensive consultation on statistical analysis.

I wish also to acknowledge B.F. Skinner'sll major contribution to my professional life (e.g., this book, my teaching style) and personal life in many ways (e.g., raising four children whose pictures appear on the cover of the book). Thank you again, Dr. Skinner. I quote from one of his last writings in a book on controversies about operant conditioning (Modgil & Modgil, 1987, p. 11),

> In what sense is my work controversial? When I am asked what I regard as my most important contribution, I always say, "the original experimental analysis of operant behavior and its subsequent extension to more and more complex cases." I see nothing controversial about that. Either my results have been confirmed or they have not. At times I have made mistakes and no doubt other flaws will be found in my work, but for the most part I think it stands.

At the risk of being presumptuous, I could not have better described my own efforts at the application of operant conditioning principles to the treatment of stuttering. This book is dedicated to people who stutter and their families, all my students and clinicians who helped collect these data, my operant colleagues in stuttering research, and to all those who continue to try to help people who stutter, hopefully using scientific, data-based strategies such as operant conditioning and single-subject design to improve their efficacy and efficiency.

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CONTENTS

Programmed Therapy FOR STUTTERING in Children and Adults

Chapter 1

BEHAVIOR PRINCIPLES

BEHAVIOR: OPERANT AND RESPONDENT

Operant analysis is a form of behaviorism, a system for analyzing and controlling our environment. The major premise is that consequences determine behavior (Skinner, 1953). Many terms have been used to identify this system, such as behavior modification, contingency management, the experimental analysis of behavior, functional analysis of behavior, operant conditioning, precision teaching, and programmed instruction, among others. These procedures have similar basic principles most of which are derived from the work of Skinner (1938, 1950, 1953, 1957, 1966, 1969, 1980, 1988, 1989) and described extensively in many other sources such as Bandura (1969); Costello-Ingham (Costello, 1977, 1980, 1982, 1983; J. Ingham, 1993a); Craighead (1981); Krasner and Ullmann (1965); Holland and Skinner (1961); Honig (1966, 1977); Mowrer (1988); Starkweather (1997a); and Ullman and Krasner (1965).

The approach is characterized by the methodology of: (a) direct observation, (b) continuous measurement, and (c) systematic manipulation of consequences. It has been applied to many behaviors (Bradfield, 1971; Brookshire, 1967; Davey & Cullen, 1988; Fargo, Behrns, & Nolen, 1970; Giradeau & Spradlin, 1970; Kazdin, 1980; Morris, 1985; Mowrer, 1988; Sherman, 1974; Sloane & MacAuley, 1968) and those described routinely in periodicals such as the *Journal of Applied Analysis of Behavior, Behavior Therapy, and Behavior Modification.* I offer this brief review of the basic principles for those readers unfamiliar with the system and as a source for references I will make to operant conditioning principles in later chapters in the book. Much of this information will be found in more detail in chapters 6 and 7 in Mowrer (1988).

In this system, all behavior may be divided into two classes: (a) respondent behavior–that behavior that is under the control of specific stimuli and is generally covert (e.g., glandular activity, simple reflexes, anxiety, autonomic nervous system functioning) and (b) operant behavior–that behavior brought under the control of varying stimuli by the consequences that follow its occurrence and is generally overt (e.g., striped muscle activity, central nervous system functioning,

speech, stuttering, thought). Operant behavior acts on the environment and, in turn, is controlled by the consequences it generates.

Stuttering is operant behavior (with the exception perhaps of that evoked by psychoneurological or psychogenetic factors) (Ferrand & Bloom, 1997). Many studies have shown that following stuttering with an aversive event will decrease stuttering (Cooper, Cady, & Robbins, 1970; J. Ingham, 1993b, R. Ingham, 1984b, 1993a), and especially the work of Martin and colleagues (e.g., Martin, 1968; Martin & Haroldson, 1971; Martin, Kuhl, & Haroldson, 1972; Martin & Haroldson, 1982). Following stuttering with a positive reinforcer will increase stuttering (Manning, Trutma, & Shaw, 1976; Martin & Haroldson, 1988; Ryan, 1974, pp. 142–149). These two major classes of demonstrations of consequences both increasing and decreasing stuttering, among many others, support the contention that stuttering is operant behavior which acts on the environment and is subject to control by manipulating the consequences.

It is this timeless, scientific system of analysis of human behavior, operant conditioning, which was used by the author to develop the programs of therapy or treatment described in this book for people who stutter. This system embodies scientific objectivity, validity, and reliability. Despite comments to the contrary (Cooper et al. 1970; Kohn, 1993; Kuhr, 1994; Modgill & Modgill, 1987), the operant system has been and continues to be extremely effective, efficient, and helpful to the clinician who is interested in changing behavior (Davey & Cullen, 1988; R. Ingham, 1984b; Onslow, 1996; Ryan & Ryan, 1983, 1995; 1999) and many examples are cited in the journals: *Journal of Applied Behavioral Analysis, Behavior Modification, and Behavior Therapy.* The work of Onslow and colleagues (Onslow, 1996), among others, also exemplifies the continuing power of this system and further makes the point that the system is not limited to any one researcher or research team or country.

There are many definitions of stuttering. Most of them include reference to repetitious, prolonged or broken speech fluency, special fears or anxiety about talking, and self-concept or attitudes relating to both fear of talking and/or the disordered talking itself. The possible causes for stuttering may be grouped into three categories: physiological (a variance in physiology), learned (any number of behaviors and/or attitudes may be learned) and psychodynamic (stuttering is a manifestation of personal maladjustment) (Bloodstein, 1995). Although additional research is still needed, there has been and will be much value in viewing stuttering as learned behavior especially operant behavior (Goldiamond, 1965; Gregory, 1968; J. Ingham, 1993b; R. Ingham, 1984b, 1993a; Mowrer, 1988; Shames & Egolf, 1976; Sheehan, 1970; Van Riper, 1982). Operant behavior is overt, has an impact on the environment, and is controlled by its consequences. Stuttering, by this definition, is, indeed, operant behavior. Many important treatment studies have shown the power of operant conditioning principles applied to stuttering treatment (R. Ingham, 1984a, 1990c; Onslow, 1996; Ryan & Ryan, 1995).

Stuttering

Stuttering as learned behavior is composed of both operant and respondent responses. A number of studies have clearly demonstrated that much of stuttering is operant behavior (Flanagan, Goldiamond & Azrin, 1958; Goldiamond, 1965; R. Ingham, 1984a; Martin & Siegel, 1966a, 1966b; Ryan, 1974). Brutten and Shoemaker (1967) have discussed in great detail the possible respondent components of stuttering. There remains some question both as to the relative importance of the operant and respondent aspects

of stuttering and to the extent of their interrelationships (Goldiamond, 1965; Gray, 1969; Gray & England, 1972; R. Ingham, 1984b; Miller & Watson, 1992; Perkins, Kent, Curlee, 1991; Shames, 1969, 1970; Shames & Florence, 1980; Shames & Sherrick, 1963; Sheehan, 1970; Starkweather, 1997a; Van Riper, 1982). Stuttering is composed of at least three classes of behavior: a speech act, an anxiety component, and an attitude expressed by verbal statements by the person about the speech problem.

Speech

The speech part of stuttering behavior refers to the activities of the oral and breathing mechanisms (centrally determined, of course, Moore, 1984). Words and parts of words are repeated, prolonged and said with tension or struggle or blocking. The breath is held. There are often long pauses. It is possible for this behavior to occur in any speaker any time. Any normally fluent speaker may "stutter" occasionally (Craven & Ryan, 1984a, 1985, 1999; Duchin & Mysak, 1987). This is the common, visible component of stuttering. This behavior can occur in isolation, that is, without either undue anxiety or verbal statements concerning the existence of stuttering or the self-concept of one as a stutterer, or person who stutters (PWS). This is especially apparent in preschool children who often demonstrate severe stuttered speech and no other verbal or attitudinal characteristics (Ryan, 1984a, 1998a, 1999b).

Anxiety

The anxiety (respondent) part of stuttering refers to the activities of the autonomic nervous system. Bloodstein (1995), Menzies, Onslow, and Packman (1999), and Miller and Watson (1992) provide current reviews of the role of anxiety. Excitement, activation, or anxiety all may be similar, if not the same, activity. Anxiety is usually not overt, although manifestations of it may be (e.g., sweating, fast speaking rate, temporary high-pitched voice). It may be either state anxiety, sensed or measured only indirectly through certain physiological correlates such as palmar sweat or trait anxiety measured through interviewing the person. Anxiety about speaking may exist in isolation, that is, without either deviation in speech or a concept of stuttering. Listen to or watch any listener call-in radio or television show. Callers often express that they are extremely anxious or nervous, yet seldom demonstrate stuttering. Can anxiety evoke stuttering? Probably. For example, anxiety may often be accompanied by a higher rate of speech that can produce stuttering behavior (Kalinowski, Armson, & Stuart, 1995). Anxiety may also interfere with the normal production or encoding of the speech act at higher CNS levels (R. Ingham, 1998; Moore, 1984; Moore & Boberg, 1987; Perkins et al. 1991). Menzies et al. (1999) suggest that although many clinicians have an anxiety reduction component in their current treatment of adults who stutter, there has been no conclusive evidence that a causative relationship between stuttering and anxiety exists. They conclude that further research using new designs may reveal that relationship so that anxiety may be handled appropriately during treatment, especially for adults.

Attitudes

Attitudes expressed by verbal behavior, in either oral or written form, come after one has experienced stuttering, is old enough to be aware of it, and can acknowledge the responses from the environment to it. See Bloodstein (1995), De Nil and Brutten (1991), Lewis (1997), Miller and Watson (1992), and Uliana and R. Ingham (1984) for recent dis-