

Praise's Magic Reinforcement Ratio:
Five to One Gets the Job Done
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All behavior analysts, teachers and parents can use praise as a reinforcer. Experimental and applied behavior analyses have established that praise, attention, and affection do in fact *function as* reinforcers. Social interaction is both a primary and a conditioned reinforcer. Contingent social interaction can shape operant behavior (lever pressing) of rats and maintain responding on fixed ratio schedules that does not differ significantly from behavior shaped and maintained with food reinforcement (Evans, Duvel, Funk, Watson, & Neuringer, 1994). Rats can be shaped to lever press when the only reinforcement is being petted and praised ("good girl") by a human (Davis and Perusse, 1988). As the term "starved for affection" suggests, social approval and affection function as reinforcers for humans as well. When adult affection is contingent on vocalization, infant vocalization increases and when infant vocalization no longer produces adult attention, vocalizations decrease (extinction; Rheingold, Gewirtz, & Ross, 1959). Just as deprivation and satiation of food alter food's effectiveness as a reinforcer, establishing operations such as deprivation and satiation of approval systematically alter the effectiveness of approval as a reinforcer. When children are deprived of approval, approval's effectiveness as a reinforcer increases. Conversely, when children are satiated with praise and admiration, approval's effectiveness as a reinforcer decreases (Gewirtz & Baer, 1958). When adult eye contact and smiling are contingent upon infant smiling, smiling is reinforced (increases) and crying, fussing and frowns decrease (Etzel & Gewirtz, 1967).

In fact, attention and praise are so well established as reinforcers that their use is seldom questioned in applied behavior analysis. Attention is regularly identified as a reinforcer in functional analyses (e.g. Berg, Peck, Wacker, Harding, McComas, Richman, & Brown 2000; Durand & Carr; 1991; Meyer, 1999). Praise and recognition are recognized as effective motivators by some in the business world. "There are two things people want more than sex and money," according to Mary Kay Ash, founder of Mary Kay Cosmetics, "recognition and praise" (Nelson, 1994, p. 9). Accordingly, Robert Preziosi, President of Management Associates argues that "there never seems to be enough recognition. After a brutal day, walk up to employees and say 'you

were great. I'm so glad about what you did today.' You'll be surprised how far a simple gesture will go" (Nelson, 1994, p. 137).

As a free, virtually always available reinforcer, praise is a very pragmatic reinforcer for behavior analysts, educators, parents, clinicians, coaches and social workers. When teachers of students with "emotional and behavioral disorder" (EBD) are taught to increase their rate of behavior-specific praise, students' rates of on-task behavior increase (Sutherland, Wehby, & Copeland, 2000). College students who receive verbal praise for doing homework spend more time completing their homework assignments (Hancock, 2000). When parents of young children with "behavioral problems" were taught to praise their children's compliance and task engagement, the resulting increased praise produced improved compliance *and* decreased inappropriate behavior (Greene, Kamps, Wyble, & Ellis, 1999). The "prompt, pause and praise procedure" is an effective and recommended remedial technique for children making slow progress in reading (Merrett, 1998).

Unfortunately, despite praise's proven effectiveness as a reinforcer and its free cost, praise is vastly underutilized. In an analysis of studies conducted in the U.S., U.K., Canada, Australia, New Zealand, Hong Kong and St. Helena, Robyn Beaman and Kevin Wheldall of Macquarie University in Sydney Australia found that "there is little evidence to suggest that teachers, universally, systematically deploy contingent praise as positive reinforcement in spite of the considerable literature testifying to its effectiveness. In particular, praise for appropriate classroom social behavior is only rarely observed" (2000, p. 431).

According to Alfie Kohn author of *Punished by Rewards: The Trouble with Gold Stars, Incentive Plans, A's, Praise and Other Bribes*, the less praise is used in the galaxy the better. In his chapter "The Praise Problem," Kohn argues that "words of praise in the form of verbal rewards generally do more harm than good, particularly when they are doled out as part of a deliberate strategy to reinforce certain ways of behaving" (1993, p. 101-102). Kohn argues that

children “should simply do what is expected of them without requiring encouragement or justification” and concludes “The Praise Problem” chapter with the disparagingly snide, “giving rewards less frequently or more stringently will not solve the underlying problem, because the problem is behaviorism itself” (p. 116).

Of course, it is impossible for anyone to know “what is expected” without some sort of encouragement or justification. In behavior analytic terms, there *must* be some sort of antecedent -- discriminative stimulus, occasion setter, setting event, or establishing operation-- that occasions the “expected” response. With children the antecedent is frequently encouragement or “verbal justification.” Due to the belief in the myth that “intrinsic interest” and “self-determination” are “undermined” by “extrinsic rewards,” the systematic use of praise specifically, and reinforcement generally, is argued against. But in reality, *reinforcers*, considered “extrinsic rewards,” including praise, increase *intrinsic interest and perceived self-determination* (e.g., Overskeid & Svartdal, 1998). Eisenberger has found that pay for performance -- reinforcement -- increases perceived self-determination, creativity, and intrinsic motivation of children, college students, and employees of a chain of large electronics and appliance stores (e.g., Eisenberger & Rhoades, in press; Eisenberger, Rhoades & Cameron, 1999).

Over the last quarter century Harve Rawson, Ph.D. has studied the effects of behavior modification programs within short-term summer school programs in academic achievement and behavior problems of “at risk” boys, all of whom have some combination of learning disabilities, behavior disorders, adjustment problems, are from low socioeconomic background, broken homes and considered culturally and socially deprived (McIntosh & Rawson, 1988; Rawson, 1992, 1973; Rawson & Cassady, 1995; Rawson & McIntosh, 1991; Rawson & Tabb, 1993). These programs have been found to produce increases in self esteem, decreases in anxiety, increased perceived internal locus of control, and decreased levels of depression. In 1992, Rawson specifically investigated the effects of the intensive short-term remediation program on academic intrinsic motivation. The foundation of the program was contrived reinforcement and praise. “The program featured ... use of a token economy system All teachers... consistently employed the following teaching techniques regardless of the learning situation:

frequent verbal praise;... continual physical gestures of approval and affection...for socially appropriate behavior;... public ceremonial awards (three times a day) for personal successes and achievements” (Rawson, 1992, p. 277, emphasis added).

In Rawson’s study (1992), comparisons of pretest and post-test scores on the *Children’s Academic Intrinsic Motivation Inventory* found that the program did indeed *increase* academic intrinsic motivation. *Significant gains in intrinsic interest were found* for reading, math, social studies, science and for general interest in academics. As a product of the contrived reinforcement program, including heavy doses of contingent praise, learning became a naturally reinforcing process. “Joy of learning was often evident in the program. [There was] observable change in a child’s wanting to learn because he now knew he could learn” (Rawson, 1992, p. 282). The following school year 69% of the participants were reported by their teachers to be “doing markedly better in class” (p. 283). These results conclusively refute the myth that extrinsic rewards undermine intrinsic motivation. Reinforcement, including contingent praise, increase intrinsic interest.

If fact, the power of praise as a beneficial life changing reinforcer is so overwhelming that to argue against its systematic use is indefensible. Behavior-specific praise may be the most effective *readily available* tool to improve achievement in high-poverty schools. In 1995 at Cascade Elementary school in Atlanta, a school with a 99% Black population and 80% low income population, the 5th graders scored in the 44th percentile in reading and the 37th percentile in math on the Iowa Test of Basic Skills. But in 1999 the fifth graders scored in the 82nd percentile in reading and the 74th percentile in math. Similar improvements were seen in all other grades as well. What accounted for the improvement was principal Alfonso L. Jessie, Jr. instituting a program based on three factors: *immediate personal attention*, testing, and a basic skills focus. “‘Children need constant encouragement,’ Jessie remarks, ‘but our encouragement has to be directed at learning.... We find every opportunity we can to say something positive, but we make sure that we are reinforcing their skill level by doing so’” (Carter, 2000, p. 50).

Five to One gets the Job Done:

Not only does the beneficial power of praise emerge as a life changing force across a wide range of

human situations, but a particular ratio, a ratio of five approvals -- five phrases of praise -- for every disapproval is identified as an effective ratio of approvals to disapprovals. Five phrases of praise for every reprimand produces results. As reported in their book *Meaningful Differences* (1995), Betty Hart, Ph.D. and Todd Risley, Ph.D. of the University of Kansas studied the parent-child interactions of welfare parents, working class parents, and professional class parents over several years focusing on children's vocabulary gains and I.Q. changes at age 3 and again at ages 9-10. Parenting style, not socioeconomic class, emerged as the strongest predictor of vocabulary gains and I.Q. increases. Children who made the greatest gains had parents who talked to their children more, were more affirmative and gave more praise. A parental "feedback tone" of approximately 5 confirmations, praise and approvals for every criticism or disparagement resulted in the greatest improvements. "Feedback tone was... strongly related to rate of vocabulary growth and general accomplishments estimated by I.Q. score.... The more positive the affect during interaction the more motivated the child is to explore new topics, to try out tentative relationships, to listen and practice, to add words to those already accumulated, and to notice the facts and relationships that IQ testers ask about" (p. 155). *Five to one gets the job done.*

John Gottman, professor of psychology, University of Washington, and cofounder of the Seattle Marital and Family Institute, popularly known as the "love lab," has observed over 2000 couples interacting over a range of topics. He is able to predict with over 90% accuracy which marriages will end in divorce and which marriages will be successful. Those marriages that contain at least five approvals or five positive interactions for every criticism or aversive interaction are successful. Marriages with an approval to disapproval ratio of less than five to one are very unlikely to last (e.g., Gottman, 1994, Monaghan, 1999). "The ratio model... suggests that what is important is the relative amount of positive to negative affect.... the ratio of positive to negative interaction during conflict resolution was *5 to 1*, whereas the ratio was 0.8 to 1 in unstable marriages" (Gottman, Coan, Carrere, & Swanson, 1998, p. 9).

Furthermore, Gottman finds that parents' high marital conflict (that is, partners with a low ratio of positive to negative interaction) aversively affects their children's physical health, affect and academic achievement. Fortunately, Gottman also finds that the

parental technique of "scaffolding/praising" can act as a "buffer" against the coercive effects of marital conflict. Scaffolding/praising includes parental attention, responsiveness, positive directiveness, excitement, *praise and physical affection* (Gottman, Katz, & Hooven, 1997). Behavior analysts may recognize these procedures as describing prompting and reinforcing successive approximations (shaping).

The assignment:

In addition to Hart and Risley's findings and Gottman's findings, giving five approvals for every disapproval has been shown to be a beneficial ratio of approvals to disapprovals in changing the behavior of juvenile delinquents (Stuart, 1971), and for establishing appropriate behavior generally (Madsen & Madsen, 1974). Based on these results, Martin and Pear (1999, p. 43) suggest an exercise where adult students attempt to reach an approval to disapproval ratio of 5 to 1 during an hour spent with children. As described below, I require a modification of this exercise for undergraduate students taking Applied Behavior Analysis and for teachers taking a graduate course on Learning. Participants almost invariably experience beneficial results. The assignment could be used profitably by behavior analysts in many applied situations.

First students are required to record their approvals and disapprovals during a "standard" period of time for at least one hour a day for several days as a baseline. Depending on each student's circumstances, the baseline could be conducted during sports practice, on a work shift, while teaching a class, during family meal time, or at children's homework or bed time. Following the baseline period, participants must continue to record their approvals and disapprovals and attempt to reach a ratio of five approvals for every disapproval during the same standard time frame used during baseline. The 'treatment' is conducted for approximately 10 days (absolute days vary depending on personal circumstances). Participants report their ratios of approvals and disapprovals during baseline and treatment, any confounds they experience, and any objective or subjective changes they note in both their behavior and the behavior of the targets of the approvals and disapprovals.

Of course, in terms of an experimental analysis of behavior or a functional analysis this assignment is unacceptable. There is no inter-rater reliability. There are no behavioral definitions of

approvals or disapprovals. "That's good honey," could be an approval, but said sarcastically it is a disapproval. Ditto for a nonverbal pat on the back. Reactivity (changing behavior because it is being recorded) frequently occurs during baseline. There is no withdrawal or reversal phase. At best each participant is conducting his/her own baseline-treatment (AB) design which is not sufficient to establish causality. Finally, there is no specific identification or reporting of the children's behaviors which are receiving approval or disapproval prior to data collection. The behaviors each participant reports on is dependent on their own unique circumstances.

Despite these numerous shortcomings, the assignment has proved beneficial to virtually all participants: the "experimenters" and the "targets." Furthermore, the results support the claim that five to one is an effective ratio of approvals to disapprovals across a wide range of situations. Below I present the results from one class of undergraduate Applied Behavior Analysis (ABA) students and one graduate class of teachers.

During baseline the teachers' average self-reported approval/disapproval ratio was 2.59 and during treatment the ratio was 4.32, a statistically significant increase ($t(21) = 4.7, p < .001$). During baseline the ABA students' average approval/disapproval ratio was 1.59 and during treatment the ratio was 4.47, a statistically significant increase ($t(16) = 6.9, p < .001$). Thus, although on average neither class reached a 5 to 1 ratio, each class significantly increased the ratio of approvals to disapprovals. What effect does this have? In the ABA class, 100% of participants, that is *all* students, suggested that during the period when approvals were increased both the target child's behavior improved *and* the student experimenter's behavior improved. For the teachers, 23 of 28 reported that both their behavior improved and their students' behavior improved. One reported that her behavior worsened and the remaining four teachers' reports were inconclusive.

Other than the ratios of approvals to disapprovals, the data collected were anecdotal narratives making graphic, quantitative, or other objective analyses problematic. Nevertheless, several consistent findings emerge with direct relevance for applied behavior analysts. Teachers consistently reported believing that they were positive in their classrooms and dispensed large amounts of approval

(initially). However, after objectively recording the number of approvals they gave, they reported they were "surprised," "amazed," or "shocked," at how many disapprovals and how few approvals they actually gave in their classrooms. Parents, both teachers and undergraduate ABA students, also frequently report the same surprise at how often they really disapprove and infrequently approve of their children's behaviors. Therefore, at the very least, the assignment provides an important lesson in the differences between subjective recollections on personal behavioral tendencies, and objective recording of behavior.

Fortunately, participants do manage to decrease their disapprovals and increase their praise which in turn results in reported changes in the behaviors of those receiving the approvals. For example one single mother stated that prior to increasing approvals, "My daughter and I usually argue the entire time we spend working on her homework." But, "approvals saved time spent on doing homework as well as improve the way Alexis and I communicate with one another. We decreased our arguments and now look forward to doing homework together." When the target of the approvals is the behavior of a spouse, marital relations typically improve. One wife reported, "the more approvals given created a much better atmosphere in our home. I actually saw an increase in my husband's attempts at helping with the household chores the more I praised him, and he became much more responsive (smiling, telling jokes, willing to listen, and affectionate). Before the negativity seemed to snowball." Over the years several of my student participants have reported that increased praise during the day resulted in increased intimacy during the night!

When the behavior of one child is praised, teachers and parents often find that other children then imitate the behavior. "When I gave a verbal approval to a child, many of the children involved in the activity began to work harder in an effort to get praise as well," reported one teacher. "If I commented on how I liked what one student was doing then many other children began to do the same thing."

A behavior criticized or reprimanded may actually be a successive approximation of an appropriate behavior. Therefore, rather than increase appropriate behaviors, disapprovals of "inappropriate" behavior may actually punish approximations toward

desirable behaviors. This downside to disapproval often becomes apparent during the assignment. A member of the university's baseball team reported exactly this effect of disapprovals on a teammate's "slack" behaviors in the weight room, "These disapprovals did not make him lift more, *actually it made him not want to lift with us anymore.*" Fortunately praise reversed this situation. "To my amazement this [praise] actually worked, I mean he didn't lift like Hercules or anything but he was always there, waiting to lift and he was more serious when lifting." Similarly, coaches consistently report better performance when disapprovals are decreased and approvals increase. "When I gave an approval everyone seemed much more responsive to learning and participating," reported a high school track coach. "They responded to constructive criticism better after receiving an approval of their behavior than they did after receiving disapproval.... More learning went on as a result of the approval and disapproval homework." Furthermore, students often find that the disapprovals for inappropriate behavior were what was maintaining the inappropriate behaviors in the first place. "While I was increasing my approvals, I needed to use disapprovals less," wrote one teacher.

To meet the 5 to 1 ratio of approvals to disapprovals teachers occasionally "lower their standards" so that they can praise a behavior that formally they would have disapproved of. But, because behaviors criticized are often successive approximations of desired behaviors (e.g., completing part of a homework assignment is an approximation of completing the entire assignment), these teachers find that increased rates of praise result in better work than when their "standards were higher." "I did not lower my expectations on what I ultimately wanted them to accomplish," wrote one teacher. "But I did begin to praise more often for a lesser amount of work accomplished during the allotted time. I was surprised to find that these few students, as with all the students, tended to work harder, and stay more fully engaged in their work when I increased the praise." "When I praised a student that had previously not been completing assignments for having one more assignment completed a particular day than the previous day," wrote another teacher, "that student had even more assignments completed the next day." Reinforcing successive approximations with praise may be the fastest method for teachers to build academic behaviors of their students.

As the above sampling of results suggests, this assignment has a wide range of behavioral applications. The baseline has diagnostic value and establishing a ratio of five approvals for every disapproval may be an effective treatment for many problems. Those who work with families, marriages and other interpersonal relationships, those who work in developmental disabilities, coaches, teachers, and those who work in management all can profit from objectively recording their own and their clients rates of approval and disapproval. If they believe they are already very positive, then the baseline will provide proof. If they do not provide many approvals, but believe that criticism and sarcasm are effective behavior management tools, (an all too common belief), then a test phase of five approvals for every disapprovals will result in worse behavior (it won't) and their criticism and sarcasm will have justification. Conversely, the likely result of a test phase of five approvals for every disapproval is that the increased approvals will result in increased performance and improved interpersonal relationships.

Cautions:

People have occasionally reported that giving approvals "feels fake," "awkward," or that their "personality" is to be belittling and sarcastic so it is quite difficult to give out approvals. But, giving approvals is a behavior like other behaviors. To be fluent and "natural" at giving approvals, giving approvals needs to be shaped and frequently reinforced, and perhaps practiced. Role playing with a behavioral professional may even be necessary. But typically, as praise is more frequently given it feels less awkward, more natural, and the resulting changes in the people receiving the praise in turn reinforces the behavior of giving praise. Praise can be informative or affectionate, or both, but *to be an effective reinforcer praise must be behavior-specific*. For example children praised for their intelligence or ability are more likely to quit and perform worse on an effortful task than children praised for their effort (Mueller & Dweck, 1998).

Why 5 to 1:

Gottman and colleagues (1998) suggest that interpersonal situations where there is never any criticism "would seem to be one version of Sartre's relationship hell" (pp. 8-9). *Everything is always good* has as much objective meaning as *everything is always bad*. Thus, if only approvals are given their

functional effect on behavior may become minuscule. However, as the evidence reviewed above suggests, praise is very powerful and only very small amounts of disapprovals are needed to keep the value of praise maximal, amounts so small that most will still deliver sufficient amounts of disapproval even while attempting to eliminate disapproval altogether. Because praise functions as a reinforcer, like other reinforcers, one can become satiated with praise. To reduce this possibility praise should be varied. (I give my students "101 phrases of praise.")

Praise is a very powerful but very underutilized reinforcer, especially considering its cost – it's free! When individuals increase their ratio of approvals to disapprovals to five to one, the behaviors and affect of *all involved* invariably improves. Five to one gets the job done!

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