

Review of Literature Related to Nonaversive Intervention Methods for Self-Injurious Behaviors of Persons with Disabilities

*Dilek Erbaş

Anadolu Üniversitesi

Abstract

Self-injurious behavior is a major problem in persons with disabilities. Several approaches have been utilized in the treatment and reduction of self-injurious behaviors in persons with disabilities. In this study, relevant journals were reviewed (n=57) for a 20 year period (1980-2000) to discuss literature related to the use of nonaversive intervention methods for reducing self-injurious behaviors. An evaluation of the reviewed studies were presented in terms of the features of the subjects, settings, the behaviors they determine as targets, data collection, experimental designs, procedures, interobserver agreement, results. The reviewed studies showed that nonaversive treatment methods are as effective as aversive treatment methods for reduction of self-injurious behaviors.

Key Words: *Self-injurious behaviors, nonaversive behavior changing methods, person with disabilities.*

Özet

Kendine zarar verme davranışları özürlü bireylerde büyük bir sorundur. Pekçok yaklaşım özürlü bireylerin kendine zarar verme davranışlarını tedavi etmede ve azaltmada kullanılmıştır. Bu makalede, kendine zarar verme davranışlarını azaltmada itici uyaran içermeyen sağaltım teknikleri kullanımına ilişkin bilgi edinmek için, son yirmi yıla ait süreli yayınlar incelenmiştir. Deneklerin özellikleri, ortamlar, hedef davranışlar, veri toplama teknikleri, deneysel desen, sağaltım teknikleri, gözlemciler arası güvenilirlik ve sonuçlar açısından incelenen çalışmaların bir değerlendirmesi sunulmuştur. İncelenen çalışmalar kendine zarar verme davranışlarını azaltmada, itici uyaran kullanılmayan sağaltım tekniklerinin itici uyararı kullanan sağaltım teknikleri kadar etkili olduğunu göstermiştir.

Anahtar Kelimeler: *Kendine zarar verici davranışlar, itici uyaran kullanılmayan davranış değiştirme teknikleri, özürlü bireyler.*

Self-injurious behavior (SIB) is a serious chronic disorder that often results in significant physical, social, educational risks (U S National Institutes of Health, 1989) Self-injurious behavior has been relatively common among people with disabilities as a form of maladaptive behavior Being so common, these behaviors have generated considerable researches concerning their treatments

Most of the research on self-injury has focused on identifying the variables, initiating and maintaining self injurious behaviors, based on the results of their functional analysis (e g Day, Horner, & O'Neill, 1994, Iwata, Dorsey, Slifer, Bauman, & Richman, 1994, Lerman, Iwata, Zarcone, & Ringdahl, 1994, McCord, Thompson, Iwata, 2001; Pelios, Morren, Tesch, Axelrod, 1999)

A number of studies have made important contributions to eliminate self-injurious behavior among people with disabilities A majority of these studies have showed that the reinforcement of incompatible or other behavior (DRI or DRO) (e.g , Cowdery, Iwata, & Pace, 1990), extinction (e g , Lerman, Iwata, Shore, Kahng, 1996, Lerman, Iwata, Wallece, 1999), differential negative reinforcement (e g , Horner, Day, Sprague, O'Brien, & Heathfield, 1991, Steege, Cigrand, Berg, Novak, Reimers, Sasso, & DeRaad, 1990), and functional communication training (e g., Carr & Durand, 1985, Cooper, Cigrand, & Donn, 1990, Fisher, & Thompson, 2000, Wacker, Steege, Northup, Sasso, Berg, Reimers), noncontingent reinforcement (Kahng, Iwata, DeLeon, 2000, Marcuse, & Vollmer, 1996) are effective methods for reducing self injurious behavior

The main purpose of this paper is to review the literature that reports the effectiveness of using nonaversive treatment methods on self-injurious behaviors among people with disabilities The following section is devoted to describing reviewed studies in terms of the subjects, settings, the target behaviors and social validation, data collection, interobserver agreement, experimental designs, procedures, results

Evaluation of the Research

An attempt to select research articles published in the major journals in special education and behavior analysis after 1980 was made The research articles were chosen on the basis of using nonaversive behavior changing methods A literature search of terms (i.e self injury or self injurious behaviors) was completed on the Internet In addition, a hand search was conducted Fifty-seven articles examining the effectiveness of nonaversive intervention methods to reduce self-injurious behaviors were found A table of articles can be found in Appendix I Following is an evaluation of the research Recommendations and implications for future research have been introduced as well

Subjects. The age range of subjects participated in the reviewed studies was from preschool to adult They almost all had different characteristics (different age, gender, functional level of the subjects) that would enhance the likelihood of methods working with a large population of people With the exception of few studies (i.e., Cowdery, et al, 1990, Horner, et al, 1991), sufficient information regarding the abilities/functioning level of the participants was included (i.e., self help skills, communication skills) in the reviewed studies

Settings Nonaversive behavior changing methods were applied in a variety of settings The setting in which the studies were conducted was usually a classroom or therapy room The functional analysis of self-injurious behaviors was conducted in an analogue setting that was different from their natural environment, which may comprise of several factors overlooked in the reviewed studies (i.e., Iwata, et al, 1982, Vollmer Marcus, & Ringdahl, 1990) The analysis and treatment of self-injurious behaviors should be implemented more often in school and home settings rather than therapy room Therefore, the amount of time for transfer and generalization can be reduced between a place in which treatment is conducted and home or school setting

Information regarding the setting size, location, and activity in which the studies were implemented,

and the number of people in the setting were not provided in all studies reviewed. Most researchers provided information about the length and number of sessions. For example, in the study conducted by Vollmer, Marcus, Ringdahl, Roane (1995) sessions lasted 10 min and usually took place 4 days per week.

Target behaviors and social validation The target behaviors for the studies were usually self-injurious behavior as well as alternative communication behaviors, which varied according to studies. In the reviewed studies, topographies of self-injurious behaviors included head hitting, head banging, body hitting, hand biting, scratching, eye poking, hand mounthing. Self injury that appeared most frequently were multiple self injurious behaviors, head banging, and body hitting. Alternative communication behaviors consisted of singing, using communication device, and using verbal responses.

Some of the definitions of target behaviors were presented in the form of a flow chart and a supporting table (Iwata, et al., 1982). Some of the authors did not define the target behavior or independent variable specifically and operationally in the methods section (i.e., Horner, et al. 1990, Mazaleski, Iwata, Vollmer, Jagtiani & Smith, 1993, Steege, et al., 1990). It would be helpful to cite nonexamples and examples of target behaviors. All reviewed studies included social validation by stating that teachers had identified the problem or discussing the danger it that the problem posed to the subjects. The severity and maladaptive nature of the behaviors were logically and intrusively a problem, making them socially valid.

Data collection The data collection systems used in the reviewed studies were either an interval recording system or frequency recording system. With the exception of few studies (i.e., Bird, Dores, Moniz, & Robinson, 1989, Vollmer, et al. 1993), they were clearly described by giving sufficient information for replication.

Interobserver agreement In almost all the reviewed studies, interobserver agreement was

calculated at least in one session in each phase. Overall interobserver agreement percentage was calculated based on interval by interval comparison of observer's records or the smaller number of observed responses was divided by the larger number of observed responses in the reviewed studies. By choosing interval-by-interval method, they obtained more accurate information in terms of agreeing on what they saw. One of the strengths is that high reliability was obtained across all reviewed studies. Almost all authors calculated nonoccurrence and occurrence agreement percentage. However interobserver agreements were restricted to recording the occurrence of the behaviors (Bird, et al. 1989, Cowdery, et al., 1990).

Experimental Design All of the reviewed studies used either a reversal design or a multiple baseline design to evaluate the effectiveness of the treatment methods. A multielement design was used for the functional analysis of self injurious behaviors (e.g. Iwata, et al. 1982, Lerman, & Iwata, 1993). Experimental control was established in all the reviewed studies, but in the study conducted by Bird, Dores, Moniz, & Robinson (1989), they did not replicate the first phase of their study.

Procedures The reviewed studies incorporate several different intervention methods across multiple phases (i.e. DRO, DRO vs noncontingent reinforcement (Vollmer, et al., 1993), and negative reinforcement (Repp, Felce, Barton, 1988, Vollmer et al., 1995), extinction plus instructional fading (Pace, Iwata, Cowdery, Andree, & McIntyre, 1993). Prior to the treatment, function analysis was implemented to identify the variables that were initiating and maintaining the subjects' self-injurious behaviors in all the studies whereas the Motivational Assessment Scale was conducted in the study done by Bird, Dores, Moniz, & Robinson (1989).

When the function of self injurious behavior was identified, the researcher created an intervention that consists of one or more of the

following strategies. One option was to discontinue reinforcement following self-injurious behaviors, this procedure was known as extinction (Lerman, Iwata, & Wallace, 1999). Another option was to provide reinforcement on a schedule richer than the schedule of reinforcement for self-injurious behavior, this procedure was known as noncontingent reinforcement (NCR) (Poling, & Normand, 1999, Vollmer, et al., 1993, Vollmer, et al., 1995). Another option was to provide the functional reinforcer based on the individual's behavior, behavior can be targeted at higher, lower, and zero rates. This procedure was known as differential reinforcement (Cowdery, Iwata, Pace 1990, Kahng, Iwata, DeLeon, & Worsdell, 2000). A final option was to teach the person a new behavior that resulted in the same outcome. This called functional equivalence training or functional communication training (Carr & Durand, 1985).

In almost all reviewed studies, the least intrusive or nonaversive behavior changing procedures were employed. Intervention procedures were generally written in replicable manner. However, the reader is often confused regarding the target behaviors that are being manipulated during each phase (i.e., Day, et al. 1994, Horner, Spague, O'Brien, & Heathfield, 1990). For example, in the study conducted by Day, Horner, & O'Neill, (1994), some questions could be raised about the independent variable: Were the treatment(s) want, escape, (i.e., easy and difficult format), and functional communication training? How did the independent variables relate to the dependent variables? A clearer description of the procedures used in the studies would enhance the clarity of the studies.

Another concern about the reviewed studies is that in terms of staff time and costs, the implementation of procedures would not be feasible to employ such procedures in a home or school setting for a limited number of subjects (i.e., Day, et al., 1994, Wacker, et al., 1990). However, compared to differential reinforcement of other behaviors (DRO), another method, such as noncontingent reinforcement method, would be easier to be implemented since teachers do not have to observe each instance of self-injurious behaviors

to ensure that resetting schedule is implemented correctly.

As a whole, the results of the reviewed studies suggested that different treatment methods such as differential reinforcement of other behaviors (DRO), noncontingent reinforcement (NCR), or functional communication training (FCT) might be effective under certain conditions. At the same time, procedural implementation may be extremely complex, and total suppression of the undesirable behavior may require the use of additional procedures (Cowdery, et al., 1990).

Results. In almost all of the studies, the results showed that the treatment methods used were highly effective in reducing self-injurious behaviors. However, the authors did not obtain maintenance or generalization data across the subjects in the reviewed studies with a few exceptions of the study by Bird, Dores, Moniz, & Robinson (1989), and Durand and Carr, (1991). In this study, the generalization of functional communication training effects across environmental changes and the maintenance of effects over several months were assessed. Follow-up studies have revealed that the reduction effect can endure for months after intervention has been discontinued. The extent to which other environmental factors contribute to this maintenance is unclear.

Implications/Recommendations for Future Research

The reviewed studies already contributed to the literature showing that effective treatment for self-injurious behavior can be nonaversive by providing data-based demonstration. Overall, the studies were well written in a scholarly manner. Even though the sample size was small, self-injurious behavior is an important area for research. However, the authors should provide more descriptive information regarding subjects, settings, and treatment procedures so that readers can better evaluate the results of studies or implement one of the treatment methods used in their classroom or their home.

An important feature of reviewed studies is that the functional analysis was conducted prior to the

treatment. Though a good deal of research demonstrating the conceptual foundation for the clinical application of functional analysis, there is not a sufficient empirical data base in functional analysis in natural settings to make methodologically sound recommendations (Armstrong & Kaufman, 1999). Therefore, further research should be conducted for functional assessment and treatment in a natural setting rather than an analogue setting. Furthermore, future researchers might compare the results obtained from functional analyses conducted in analogue settings to those obtained in natural settings.

Results of the reviewed studies have set forth that choosing a treatment method based on results of functional analysis of self-injurious behavior is an effective process for treating self-injurious behaviors. Moreover, when problem behaviors serve multiple functions, each function will need to be addressed by having unique features in the intervention method (Day, et al., 1994, Smith, et al., 1993). Therefore, comprehensive intervention methods combine multiple procedures to address the different problem behaviors, different maintaining functions and different problem routines a person presents.

Most authors primarily focused on eliminating or reducing problem behavior rather than reinforcing appropriate behavior that the subjects had already had or teaching alternative behaviors. However, the treatment methods designed to decrease a self-injurious behavior included an instructional component for building a functionally equivalent, socially appropriate, or an alternative response in the some of the reviewed studies (i.e., Carr & Durand, 1985, Fisher, Thompson, 2000, Horner et al., 1990).

Some fixed findings have been noted with almost all of the treatment methods in the literature regarding the treatment of self-injurious behavior. It seems evident that comparative treatment studies are needed on self-injurious behavior. Furthermore,

procedural implementation of some treatment methods used in the reviewed studies are extremely complex in home or school settings. This may result in lack of implementation of treatments in these settings so maintenance and generalization might not occur. Therefore, further research will be needed to find a simple and practical method to be implemented in school and home settings. Likewise, examination of the generality of literature's findings in school or home setting is an important step in the treatment of self-injurious behaviors.

There is insufficient information about the variables that influence the maintenance and generalization of response reduction (Durand and Carr, 1991). Therefore, behavior-changing interventions that clinicians and families are willing and able to implement can be combined successfully so that the results of interventions are durable over socially important time periods.

The implication of the reviewed studies is that when a teacher has a choice between two or more effective treatment methods, it could be worthwhile to consider choosing the nonaversive one. Nonaversive behavior changing methods may be viable treatment strategy for the reduction of self-injurious behavior in persons with disabilities. Although there is promise to nonaversive behavior changing methods, many practical and theoretical issues remain to be resolved. The existing research is encouraging. Perhaps the most important effect of existing researches is that it provides ideas to hurried researchers searching for nonaversive behavior changing methods to add to their lists.

In summary, self-injurious behavior will not go away without interventions. The studies present varied nonaversive behavior methods to eliminate self-injurious behavior. Both teachers and parents should carefully examine these methods to determine which would be effective for individual student. It is also important for educators to implement a functional analysis before any intervention in order to determine what is maintaining the behavior.

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APPENDIX 1: TABLE OF REVIEWED STUDIES

Citation	Journal
Iwata, Dorsey, Slifer, Bauman, & Richman, 1982/1994	Analysis and Intervention in Developmental Disabilities
Dorsey, Iwata, Reid, & Davis, 1982	Journal of Applied Behavior Analysis
Carr & Durand, 1985	Journal of Applied Behavior Analysis
Repp, Iwata, Edwards, & McCosh, 1986	Journal of Applied Behavior Analysis
Day, Day, Rea, Schussler Larsen, S E , & Johnson, 1988	Behavior Modification
Repp, Felce, & Barton, 1988	Journal of Applied Behavior Analysis
Bird, Dores, Moniz, & Robinson, 1989	American Journal on Mental Retardation
Steege, Wacker, Berg, Cigrand, Cooper 1989	Journal of Applied Behavior Analysis
Iwata, Pace, Kalsher, Cowdery, Cataldo, 1990	Journal of Applied Behavior Analysis
Steege, Wacker, Cigrand, Berg, Novak, Reimers, Journal of Applied Behavior Analysis	Sasso, DeRead, 1990
Cowdery, Iwata, Pace, 1990	Journal of Applied Behavior Analysis
Wacker, Steege, Northup, Sasso, Berg, Reimers, Cooper, Cigrand, Donn 1990	Journal of Applied Behavior Analysis
Horner, Spague, O'Brien, & Heathfield, 1990	Journal of the Association for Persons with Severe Handicaps
Vollmer, Marcus, & Ringdahl, 1990	Journal of Applied Behavior Analysis
Carr, Taylor, & Robinson, 1991	Journal of Applied Behavior Analysis
Durand & Carr, 1991	Journal of Applied Behavior Analysis
Horner, Day Sprague, O'Brien, Heathfield, 1991	Journal of Applied Behavior Analysis
Pace, Iwata, Cowdery, Andre, McIntry, 1993	Journal of Applied Behavior Analysis
Campbell, & Lutzker, 1993	Journal of Developmental And Physical Disabilities
Lerman, Iwata 1993	Journal of Applied Behavior Analysis
Vollmer, Iwata, Zarcone, Smith, Mazaleski 1993	Journal of Applied Behavior Analysis
Zarcone, Iwata, Vollmer, Jagtiani, Smith, Mazaleski, 1993	Journal of Applied Behavior Analysis
Zarcone, Iwata, Hughes, Vollmer 1993	Journal of Applied Behavior Analysis
Mazaleski, Iwata, Vollmer, Zarcone, Smith, 1993	Journal of Applied Behavior Analysis
Smith, Iwata, Vollmer, & Zarcone, 1993	Journal of Applied Behavior Analysis
Van Houthen, 1993	Journal of Applied Behavior Analysis
Goh, & Iwata, 1994	Journal of Applied Behavior Analysis
Day, Horner, & O'Neill, 1994	Journal of Applied Behavior Analysis
Hagopian, Fisher, & Legacy, 1994	Journal of Applied Behavior Analysis
Vollmer, Marcus, & LeBanc 1994	Journal of Applied Behavior Analysis
Mazaleski, Iwata, Rodgers, Vollmer, & Zarcone, 1994	Journal of Applied Behavior Analysis
Zarcone, Iwata, Mazaleski, & Smith, 1994	Journal of Applied Behavior Analysis
Lerman, Iwata, Zarcone, & Ringdahl, 1994	Journal of Applied Behavior Analysis
Gerra, Dortman, Plaue, & Schlackman, 1995	Journal of Visual Impairments and Blindness
Vollmer, Marcus, Bethany, Ringdahl, & Roane, 1995	Journal of Applied Behavior Analysis
Shukla & Albin, 1996	Journal of Applied Behavior Analysis
Marcus & Vollmer, 1996	Journal of Applied Behavior Analysis
Drasgow, & Halle, 1996	Topics in Early Childhood Special Education

Citation	Journal
Sigafoos, & Meikle, 1996	Behavior Modification
Lerman, Iwata, Shore, Kahng, 1996	Journal of Applied Behavior Analysis
Shirly, Iwata, Kahng, Mazaleski, Lerman, 1997	Journal of Applied Behavior Analysis
Bowman, Fisher, Thompson, & Piazza, 1997	Journal of Applied Behavior Analysis
Roscoe, Iwata, Goh, 1998	Journal of Applied Behavior Analysis
Vollmer, Progar, Lalli, Vancamp, Sierp, Wright, Nastasi, & Eisenchink, 1998	Journal of Applied Behavior Analysis
Mace, Shapouri, & Mace, 1998	Journal of Applied Behavior Analysis
O'Reilly, & Lanctoni, 1999	Behavior Modification
Lindaure, DeLeon, Fisher, 1999	Journal of Applied Behavior Analysis
Poling, & Normand, 1999	Journal of Applied Behavior Analysis
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TURKÇE ÖZET

OZURLU BIREYLERİN KENDINE ZARAR VERME DAVRANIŞLARININ AZALTILMASINDA İTİCİ UYARAN İÇERMİYEN SAĞALTIM TEKNİKLERİ UYGULANAN ARAŞTIRMALARIN TARANMASI

Ozurlu çocuklarda davranış bozukluğu olarak kendine zarar verme davranışlarına sıklıkla rastlanmaktadır. Bu davranışlar oldukça yaygın olarak görüldüğünden, nedenine ve ortadan kaldırılmasına yönelik pek çok araştırma yapılmıştır.

Gerçekleştirilen araştırmalarda, ozurlu bireylerde görülen kendine zarar verme davranışlarının azaltılması ve ortadan kaldırılmasında farklı pek çok sağaltım yöntemi kullanılmıştır. Bu yöntemler itici uyaran kullanılan sağaltım yöntemlerinden, itici uyaran kullanılmayan sağaltım yöntemlerine kadar sıralanmaktadır. Bu makalede, son yirmi yıldır süreli yayınlarda yayımlanan problem davranışların azaltılmasında itici uyaran kullanılmayan sağaltım yöntemlerinin uygulandığı araştırmalar incelenmiştir.

İncelenen araştırmalar denekler, ortam, hedef davranışlar, veri toplama yöntemleri, kullanılan sağaltım teknikleri ve sonuçlar açısından değerlendirilerek ileri araştırmalara yönelik öneriler sunulmuştur. Araştırmalara katılan deneklerin yaş ortalaması, okul öncesi düzeyden yetişkinliğe kadar değişkenlik göstermektedir. Denekler farklı yaşlarda, cinsiyetlerde, farklı performans düzeylere sahip olduğundan, hemen hepsinin özellikleri araştırma sonuçlarının genellenmesine hizmet edecek nitelikte değişiklik göstermektedir.

Araştırmaların yapıldığı ortam genellikle sınıf terapisi odası ya da hastanedir. Kendine zarar verme davranışlarının nedenini belirlemeye yönelik yapılan işlevsel analiz ve azaltılmasında kullanılan sağaltım teknikleri doğal ortamlara benzemeyen benzeşim ortamlarında yapılmıştır. Ancak, bu tekniklerinin uygulanması terapi odaları dışında, daha sıklıkla okul ve ev ortamında yapılmalıdır.

Boylece, sağaltımın yapıldığı ortam ile deneğin yaşadığı ev ve okul ortamı aynı olacağından, sağaltım tekniğinin etkilerinin genellenmesi için geçen zaman azalabilir. İncelenen araştırmaların hepsinde, araştırmanın yapıldığı ortamın büyüklüğü, yeri, kendine zarar verme davranışının hangi çıkışlık sırasında gerçekleştiği ve ortamda bulunan kişilerin sayısına ve oturumların uzunluğu ile sayısına ilişkin yeterli bilgi sağlanmıştır.

Araştırmalarda hedef davranışlar genellikle kendine zarar verme davranışları olmakla birlikte, problem davranışlarla aynı işlevi gören alternatif iletişim davranışları da olmaktadır. Araştırmalarda en sık karşılaşılan kendine zarar verme davranışları, başa vurma, el ısırma, vücudun çeşitli parçalarına vurma, başı mobilyalara ya da her hangi bir yere vurma, saçını çekme gibi davranışlardır. Araştırmalarda hedef davranışların ya da bağımsız değişkenlerin belirli ve işlevsel olarak tanımlanmadığı gözlemlenmiştir. İncelenen bütün araştırmalarda, öğretmenler deneklerin bu davranışlarını farketmiş ve ne kadar tehlikeli olabileceğini tartışarak, araştırmanın sosyal geçerliliği belirlemiştir.

Araştırmalarda kullanılan veri toplama tekniğini genellikle aralıklı kayıt tekniği ya da olay kaydı tekniğidir. Gözlemciler arası güvenilirlik değerlerinin bütün çalışmalarda oldukça yüksek olduğu belirlenmiştir. Hemen hemen bütün araştırmalarda oluşum ve oluşmana güvenilirlik hesaplamalarına yer verilmediği belirtilse de hedef davranışların sadece oluşum güvenilirlik puanları verilmiştir.

İncelenen araştırmalarda sağaltım tekniğinin etkilerini belirlemek için kullanılan araştırma modeli tek denek araştırma desenlerinden ABAB modeli ya da çoklu başlangıç modelidir. Kendine zarar verme davranışlarının işlevsel analizinde ise donuşumlu uygulama modeli kullanılmıştır.

İncelenen araştırmalarda kendine zarar verme davranışlarının azaltılmasında farklı sağaltım teknikleri kullanılmıştır. Bu tekniklerinin kullanılmasından önce, deneklerin kendine zarar verme davranış-

larının nedenlerini belirlemeye yönelik işlevsel analiz yapılmıştır. İncelenen arařtırmaların sonuçları, kullanılan sađaltım tekniklerinin kendine zarar verme davranıřlarının azaltılmasında etkili olduđunu gostermiştir.

İncelenen arařtırmaların tumu oldukça iyi yurutulmuř ve yazılmıřtır. Ayrıca, yapılan arařtırmalarda genellikle bir ya da birden fazla sađaltım tekniđi kullanıldıđı gözlemlenmiştir. Bununla birlikte, en etkili sađaltım tekniđini belirlemek için karřılařtırmaalı çalıřmalara yer verilebilir. Bazı arařtırmalarda alternatif iletiřim davranıřları öğretilmesine rađmen incelenen arařtırmaların pek çođunda sıklıkla deneklerin uygun davranıřların pekiřtirilmesi ya da alternatif davranıřlar öğretmek yerine olumsuz davranıřların azaltılmasına odaklařılmıştır. Kendine zarar verme davranıřlarının onlenmesi ve azaltılmasında

bu davranıřların ortaya çıkmasına neden olan ortama iliřkin olaylar ve davranıř öncesi nedenlerin belirlenip gerekli düzenlemeler yapılarak, davranıřlara herhangi bir mudahale yapılmaksızın azaltılabileceđi de göz önünde bulundurulabilir.

Ayrıca, gerçekteřtirilen arařtırmaların ve deđerlendirmelerin dođal ortamlarda ve dođal araçlarla yapılarak genellenebilirliđi artırılmalıdır. Deneklerin arařtırma tamamlanıđında sađaltım tekniklerinin etkilerini belirlemek için izleme verileri toplanmalıdır.

İncelenen arařtırmalar, kendine zarar verme davranıřlarının azaltılması ve ortadan kaldırılmasında itici uyaran kullanılmayan sađaltım tekniklerinin etkili olduđunu gostererek alanyazına önemli katkı sađlamıştır.