



Influence of Negative Reinforcement on Teaching Exceptional Children in Rivers State

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ABSTRACT

The study examined the influence of negative reinforcement on teaching exceptional children. To achieve the purpose of the study, two (2) objectives of the study, research questions and hypotheses were developed to guide the study. The research design used for the study is descriptive survey design. The population of the study consists of all the teachers in the school of handicapped Borokiri, Port Harcourt with a population size of 40 teachers. The study made use of purposive sampling technique with the sample size of 40 teachers. The instrument used for the study is structured questionnaire and the data gathered were analysed using weighted mean score and standard deviation for the research questions while the null hypotheses were tested using t-test statistical tool at 0.05 level of significance. Based on the analysis, the findings revealed that there is a significant negative influence in the “no picture” as negative reinforcement and the intellectually exceptional children and that “undesired item” as negative reinforcement influence the physically handicapped children. Based on the findings, the researcher recommends that the physically challenged or handicapped school management should advice their teachers not to use “no picture” as a negative reinforcement hence it makes the students to be emotionally weak and discouraged and The school management should organize an awareness campaign for the teachers on the uses of undesired items as negative reinforcement for the physically handicapped children.

Keywords: Influence, Negative, Reinforcement, Teaching, Exceptional, Children.

INTRODUCTION

One of teachers most valued behaviour and classroom management tool is reinforcement. Reinforcement can be used to teach new skills, teach a replacement behaviour for an interfering behaviour, increase appropriate behaviours or increase on-task behaviour (Team, 2015). Reinforcement may seem like a simple technique that teachers use in teaching. Studies have reviewed that reinforcement is only truly being used if following an appropriate behaviour, a consequence is provided and it increases the likelihood of the student using the behaviour in the future (Team, 2015). Reinforcement often fails to increase the desired behaviour in the future when the reinforcer is not actually motivating to the student.

According to Alberto and Troutman (2009), negative reinforcement is a method that can be used to help teach specific behaviour. With negative reinforcement, something uncomfortable or otherwise unpleasant is taken away in response to a stimulus. Over time. The target behaviour should increase with the expectation that the unpleasant thing will be taken away or reduced. Hagopian, Boelter and Jarmolowics (2011) observed that for negative reinforcement to work, whatever that is taken away must be taken away immediately after the behaviour in question. The end result is to get whatever behaviour is happening to continue and even increase.

Negative Reinforcement vs. Punishment

Many people confuse negative reinforcement with punishment. The key area where these two methods differ is in the end result. With reinforcement, adding or taking away something is meant to increase the behavior. With punishment, adding or taking away something is meant to decrease or weaken the behavior. You may already be familiar with specific examples of punishments. They include things like time-outs, groundings, or loss of privileges. Just like with reinforcement, though, punishment can be broken down into positive punishment and negative punishment.

- With positive punishment, you add something unpleasant in response to a behavior. For example, a child chews gum in class, which is against the rules. The punishment is the teacher disciplining them in front of the class. The child stops chewing gum in class.
- With negative punishment, you take away a positive reinforcement in response to a behavior. For example, an older sister picks on her younger brother. The punishment is the parent taking away her favorite toy. The girl stops picking on her brother as a result.

So, should you use negative reinforcement or punishment? Think back to your goal. If it's to increase a certain behavior, negative reinforcement is the better approach. If it's to decrease a behavior, punishment may be the better route.

Negative Reinforcement: Bad or Good

While the word "negative" may throw you, using this method for behavior change isn't necessarily bad. In negative reinforcement, the word "negative" is referring more to the act of taking something away, like a minus sign in a mathematical equation. Usually the thing that's removed in response to the behavior is something the person finds unpleasant or uncomfortable. The removal often results in a favorable outcome for the person.

Efficacy: Negative reinforcement can be an effective tool when used correctly. Using negative reinforcement may not always get the intended results, however. This type of behavior conditioning is simply meant to increase a behavior. As a result, it can work both ways, reinforcing either favorable or unfavorable behaviors.

Examples of Negative Reinforcement for Unfavorable Behaviours

A child screams whenever they're offered macaroni and cheese at a meal. When they scream, their parents immediately take the food away. Each time macaroni and cheese is offered, the child's tantrums increase and the parents give in.

- Before behavior: Macaroni and cheese on child's plate
- Behavior: Child screams
- After behavior: Parents take food away
- Future behavior: Child will scream whenever offered macaroni and cheese

A child doesn't like wearing a certain shirt their mother purchased for them. The child noticed in the past that their mother doesn't make them wear damaged clothing, so the child cuts the shirt with scissors. When the mother discovers this, she takes the shirt away.

- Before behavior: Horrible shirt
 - Behavior: Child damages clothing
 - After behavior: Mother takes shirt away
 - Future behavior: Child will damage clothing they don't want to wear
- Negative reinforcement in the classroom

Negative Reinforcement Might Work in a Classroom Setting

Example of negative reinforcement in the classroom: A student with autism is learning to communicate using pictures. The student is working with the "no" symbol of a circle with a line through it, also known as the PECS "no" picture. The teacher helps the student learn to show the "no" picture when they're being offered something they don't like. Now when the child is presented with something they don't want, they display the "no" picture.

- Before behavior: Child given something they don't want
- Behavior: Child shows "no" picture

- After behavior: Undesired item is taken away
- Future behavior: Child shows “no” picture when they want something taken away

In this example, the negative reinforcement is beneficial to the child. That said, positive reinforcement is typically the better approach to behavior in a classroom setting. This might include things like motivating children with the use of small prizes, social activities, and special privileges for increasing positive behaviors.

Exceptional Children

Exceptional children differ from the norm, either above or below, in physical attributes or learning ability to such an extent that they need specialized educational services or physical accommodations to benefit fully from schooling rather than negative reinforcement. (Heward, 2012). The term is more often used in the special education community than by medical and psychological professionals, and includes children whose performance is superior and who require enrichment of curriculum and more challenging instruction in order to achieve their maximum potential, as well as those with learning difficulties, physical or sensory impairments or behavior problems that require modification of the education regimen in order to help them learn. The “exceptional” rubric is preferred to terms involving disabilities, impairments or handicaps because it includes gifted and especially talented children. The disabilities or impairments of exceptional children are subsumed by psychiatry and psychology under the category of Neuro developmental Disorders in the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 2013).

Handicap, Impairment, Disability, and Disorder

The term “handicap” came to be applied to a physical or mental disability during the 20th century. The word appears to have originated in the 16th century, and may refer to the 1504 decree by King Henry VII that permitted maimed war veterans to beg in the streets of England; this was usually done with a cap in the hand. An alternative explanation involves “hand-in-cap”, a 17th-century lottery game in which 2 players offered up objects in return for a monetary prize and the presenter of the less valuable item had to make up the difference in value. The term came to be applied to an attempt to make a contest more equal by imposing a burden on one contestant. The first practical application of this was in racing, where the stronger horse had to carry extra weight to make the race more equal. The process was applied numerically in golf, and came during the 19th century to signify the act of equalization itself. The term came by the end of the century to be applied to persons who were “mentally or physically defective” (Anderson, 2013).

Impairment refers to reduction or loss of function or ability, and can be produced by multiple causes ranging from amputation to intoxication. When an impairment limits an individual’s ability to perform a particular function as normal individuals do, such as the effect of paralysis on walking or running, a disability is considered to exist. When an impairment or disability prevents or hampers the individual’s interaction with the environment, the individual may be considered to be handicapped. An impairment or disability may not constitute a handicap if it can be overcome by effort or accommodation: an amputee can walk with a prosthetic limb, and there are numerous examples, ranging from Milton to Beethoven to Stephen Hawking, of great achievement despite severe disability. An impairment or disability can also be handicapping in some circumstances but not in others: a blind individual can walk and read, for example, but cannot drive. Historically, many of the handicaps imposed by impairment or disability have been the result of the beliefs and reactions of others. Children who may experience developmental problems at a later time because of the circumstances of their birth or environment are termed “at risk”. The categories of exceptionality generally recognized in special education include: gifted or talented, multiple disabilities, medical disorders, traumatic brain injury, visual or hearing impairment, communication disorders, autism and related disorders, emotional and behavioral disorders, learning disabilities and mental retardation or developmental disorders.

Learning Disabilities

About 6.5 million children are identified as exceptional in our educational system. Learning disabilities are the most prevalent exceptional condition, and affect up to 10 per cent of the population. This was not always the case, and through most of history those with learning disability were either not specifically identified or wrongly considered to be lazy or of low intelligence. German internist Adolph Kussmaul is memorialized in 6 medical eponyms and introduced endoscopy, gastric lavage and thoracentesis; his contribution to neuropsychiatry came in 1877 with the recognition of “word blindness”, an inability to learn to read despite intact vision and speech and normal intellect. Ten years later, Rudolf Berlin observed individuals unable to read because they could not decipher written or printed symbols, and termed this “dyslexia”. Hinshelwood and Morgan in Britain and W.E. Bruner in the United States studied children with apparent congenital inability to learn to read between 1895 and 1905. Samuel Orton began the systematic study of learning disability at the University of Iowa in 1919, and first postulated that reading disability arose because the appropriate cerebral organization to connect the spoken and visual forms of words had not been established. The term “learning disability” was introduced by Samuel Kirk in 1963. Magnetic Resonance Imaging and Functional MRI studies after 1996 have established that learning disabilities are associated with thalamocortical and arcuate fasciculus volume loss (Anand, 2006), and at least 9 candidate genes on the X chromosome and one specific mutation on chromosome 6 have been associated with learning disability (Kovas & Plomin, 2007).

Children with learning disabilities represent 46 per cent of students receiving special educational assistance. Learning disability is characterized by difficulty learning despite intelligence at or above normal levels, and is manifested in the classroom by a discrepancy between measured intelligence and documented achievement. Language, reading and writing, mathematical learning or information processing may be individually affected or involved in combinations, and the causes are multiple and both familial and environmental; inherited learning deficiency, prematurity and birth injury and toxic exposure are the chief causes (Sonoma State University, 2014).

Types of Exceptional Children

The following points highlight the four main types of exceptional children. The types are. The Intellectually Exceptional Child, The Physically Handicapped Child, The Emotionally Disturbed Child and The Multi-Handicapped Child.

The Intellectually Exceptional Child:

There are three groups comprising the intellectually exceptional children. On one hand we have the gifted child, the child with superior intellect. Gifted children exceed, in terms of intelligence quotient, 25 or 130 and generally fall within the range between 1Q, 130 and 180 or above. Such children constitute about 2 to 7 percent of the average population. These children are more neglected in terms of special provisions, particularly in the elementary school, than are children of any other area of exceptionality.

They present a unique challenge to teachers and administrators who must plan a realistic programme geared to meet the special needs of the gifted pupil and as the same time insure that society will benefit to the maximum from the unusual abilities and leadership qualities which the children and youth with high mental ability possess.

It is not enough merely to set normal standards for them or to leave them to their own devices on the assumption that they are well-qualified to care themselves. Such negligence and lack of appropriate instruction encourages some gifted students to operate on a resort ‘get-by’ policy, while others become so bored that they resort to a social if not antisocial behaviour. If properly guided, they can become the evaluators and innovators of society, the great economists, industrialists, engineers, statesmen, scientists and linguistics. They need special curriculum content and precepts, special methods of teaching, special leadership roles in the school and college society.

- (i) The slow-learners are those children whose measured intelligence quotient is somewhere between 80 and 95. They have problems of adjustment and education which must be understood by parents and teachers. They need remedial education.

- (ii) The mentally handicapped or the educable mentally retarded pupils possess I.Q., between approximately 50 to 75. They can however, become literate and socially and economically self-sufficient in childhood.
- (iii) The mentally difficult or trainable. Mentally retarded children have been defined as possessing I.Q., scores between 30 and 50. Because their mental ages approximate 4 to 8 years by adulthood, they can expect to develop rudimentary skills in self-care, socialisation, and oral communication, but not to become literate. This group will need some social support or protection for all of their lives. Many of them are able to perform useful tasks at home or in a sheltered environment. Mentally deficient children whose I Qs fall below 30 cannot benefit from any training. They need custodial care and are called custodial cases.

Physically Handicapped:

Within the large category of the physically handicapped children are a number of separate and distinct groups of children, each of which requires special thought by educators. Herein are children with impaired vision, children with impaired hearing, and children with speech handicaps, children with orthopaedic and neurological impairment. Children with impaired vision may be subdivided into two major groups, that is, the partially-sighted and the blind. The basis of grouping is in terms of visual activity. The partially sighted are those whose vision is between 20/70 and 20/200 in the better eye with correction. The blind child is one whose vision is less than 20/200 with correction or whose field of vision is significantly restricted. These children need special programmes, special methods of teaching, special equipment and teaching aids. The blind have to use braille as their reading medium. Some of them, partially seeing ones, may be able to read large letters slowly but do not have sufficient vision to read them effectively.

The blind have to acquire skills in travel and mobility, in adjusting to group situations and strange environments, in avoiding undesirable facial expressions and mannerisms, and in learning to explore the world about them by tactual means. They need suitable vocational training. Pupils with impaired hearing encounter more difficulty scholastically than other children with sensory disabilities. Besides teaching subject-matter, a teacher of the hearing impaired must offer instruction in speech development, speech reading, language, and auditory training. In children who are hard of hearing, the residual hearing is functional for acquiring language usually with a hearing aid but sometimes without one.

Children who are deaf, have a profound hearing loss, either congenitally or accidentally after they have experience of speech. They need to acquire their language concepts and skills in speech and speech reading through special instruction i.e., lip-reading. Whether the hearing impaired children need specialised instruction in a special class depends on the degree of hearing loss, the age when the loss occurred amount of special training already received and amount of language, speech, and speech reading proficiency attained. Speech disabilities are often closely associated with loss of hearing. They result from developmental, functional and organic causes.

Delayed speech may be associated with the former while stuttering is typical of a functional speech disability. Cleft palate and cerebral palsy cause speech disabilities of the organic type. Infantile and other minor speech problems can be corrected by the teacher, but the more difficult ones require direct services of a speech therapist. Unfortunately, in India we have hardly 3 or 4 trained speech therapists and not more than 3 or 4 speech clinics. The various types of speech disabilities include defective articulation, lispings, stuttering, voice- disorders of pitch, quality of duration.

Pupils with neurological and non-sensory physical impairments are also included in this group. Disabilities may result from polio, osteomyelitis, tuberculosis, central palsy, epilepsy, and such as chronic health conditions as cardiac disorders, asthma, nephritis hepatitis and diabetes. These conditions make the children "crippled" in functioning. Some of these children may become crippled because of malformations or malfunctions of bones, joints or muscles. These are also called orthopaedic handicaps. In a few cases, there may be aphasia which is a language disorder due to brain damage. All these children need specialised care and specialised techniques of training and education.

Emotionally Disturbed Children:

The emotionally disturbed children include those with behaviour problems and those who are socially maladjusted or the delinquents. The causes of emotional disturbance or social maladjustment are a breakdown in the family constellation, a developmental disturbance, an economic, social or ethnic or religious conflict, unhappy home and school life generating all sorts of emotional insecurity, overcrowding in houses and schools, lack of individual attention, absence of individualized instruction, primitive discipline and ego- deflating methods of teaching or handling at home.

These children need special care and attention. They may disrupt the rest of the class by their irregular class attendance, may place under pressure on the teacher and may not be able to learn because of their own inner conflicts and anxieties. Such children need the help of child guidance specialists and a mental hygiene approach.

Multi-Handicapped or Multiple-Handicapped Child:

The multi-handicapped or multiple-handicapped child has a problem of exceptionality which is highly complicated. Children may be mentally retarded as well as speech handicapped. They may be at the time suffering from epilepsy.

They may have cerebral palsy with mental retardation and epilepsy. They may be deaf, blind and mentally handicapped. They may be mentally defective, speech handicapped and suffer at the same time from behaviour disturbances. Very little research has been done in this area so far. Hence chances of their rehabilitation are meagre.

Statement of the Problem

Intellectually, exceptional disorder, physically handicapped disorder, emotional disturbed disorder and multi-handicapped disorder are among the most common disabilities, and have been recognised for longer than the other forms of modern exceptionality that affect children or students learning behaviours. The first special education for intellectual disability was attempted in 1799 by Jean-Marc Itard, who undertook the training of Victor the Wild Boy, a probably retarded feral child. The study and treatment of emotional and behavioural disorders in children is a relatively new discipline. Reinforcement is used to teach new skills, teach a replacement behaviour for an interfering behaviour, increase appropriate behaviours, or increase on-task behaviour. But negative reinforcement is the removal of an aversive event or condition, which also increases appropriate behaviour.

Purpose of the Study

The purpose of the study is to examine the influence of negative reinforcement on teaching exceptional children. The objectives of the study are to:

1. examine the extent “no picture” as negative reinforcement influence the intellectually exceptional children.
2. determine the extent “undesired item” as negative reinforcement influence the physically handicapped children.

Research Questions

The researcher poised the following research questions that guided the study:

1. To what extent “no picture” as negative reinforcement influence the intellectually exceptional children?
2. To what extent “undesired item” as negative reinforcement influence the physically handicapped children?

Hypotheses

The following hypotheses are formulated to guide the conduct of the study:

1. There is no significant relationship on the mean rating of the respondents between “no picture” as negative reinforcement and influence on intellectually exceptional child.
2. There is no significant relationship on the mean rating of the respondents between “undesired item” as a negative reinforcement and influence on the physically handicapped child.

METHODOLOGY

This section is proper and particular attention to get a successful and meaningful result in the study. It is concerned with the various methods used in obtaining and analyzing data for the study.

Research Design: This study used a simple descriptive survey which aimed at examining the influence of negative reinforcement on teaching exceptional children in Rivers State. The population of the study consists of all the teachers in the school of handicapped Borokiri, Port Harcourt with a population size of 40 teachers. The study made use of purposive sampling technique. Purposive sampling is known as a non-probability sample that is selected based on characteristics of a population and the objective of the study. However, the sample size of the study is 40 teachers. The instrument used for the study is a self-developed questionnaire. The instrument was rated using 4-point rating scale of Very High Extent (VHE), High Extent (HE), Low Extent (LE) and Very Low Extent (VLE). The data gathered were analysed using weighted mean score and standard deviation for the research questions while the null hypotheses were tested using t-test statistical tool at 0.05 level of significance.

RESULTS

Research Question 1: To what extent “no picture” as a negative reinforcement influence the intellectually exceptional children?

Table 1: Mean and standard deviation analysis of how “no picture” as negative reinforcement influence intellectually exceptional children

S/N	Items	Responses				N	$\Sigma \bar{X}$	Mean \bar{X}	SD	Remarks
		VHE	HE	LE	VLE					
1.	“No picture” as a negative reinforcement makes intellectually exceptional children to be emotionally weak	20 (80)	15 (45)	3 (6)	2 (2)	40	133	3.32	1.82	Very High Extent
2.	Intellectually exceptional children need negative reinforcement to encourage them	5 (20)	7 (21)	8 (16)	20 (20)	40	77	1.92	1.38	Very Low Extent
3.	Teachers are not advised to use negative reinforcement for the physically exceptional children hence they are to be encouraged through positive reinforcement	15 (60)	10 (30)	8 (16)	7 (7)	40	113	2.82	1.68	High Extent

Source: *Field Survey, 2019*

The analysis in Table 1 reveals that the respondents accepted or agree that “no picture” as a negative reinforcement makes intellectually exceptional children to be emotionally weak. The table still indicates that the respondents rejected the point that intellectually exceptional children need negative reinforcement to encourage them. It is observed from the table that the respondents accepted the point that teachers are not advised to use negative reinforcement for the physically exceptional children hence they are to be encouraged through positive reinforcement.

Research Question 2: *To what extent “undesired item” as negative reinforcement influence the physically handicapped children?*

Table 2: Mean and standard deviation analysis of how “undesired item” as negative reinforcement influence the physically handicapped children

S/N	Items	Responses				N	$\Sigma \bar{X}$	Mean \bar{X}	SD	Remarks
		VHE	HE	LE	VLE					
4.	Showing undesired item to the physically handicapped children will not encourage them to learn well	15 (60)	20 (60)	3 (6)	2 (2)	40	128	3.20	1.79	High Extent
5.	Physically handicapped child learn better and faster through negative reinforcement	8 (32)	7 (21)	10 (20)	15 (15)	40	88	2.20	1.48	Low Extent
6.	Teachers should employ positive reinforcement instead of negative reinforcement in teaching physically handicapped children	20 (80)	18 (54)	2 (4)	- -	40	138	3.45	1.86	Very High Extent

Source: *Field Survey, 2019*

The analysis in Table 2 indicates that the respondents accepted or agree that showing undesired item to the physically handicapped children will not encourage them to learn well. The table still shows that the respondents rejected the point that physically handicapped child learn better and faster through negative reinforcement. It is observed from the table that the respondents accepted the point that teachers should employ positive reinforcement instead of negative reinforcement in teaching physically handicapped children

Test of Hypotheses

Hypothesis 1: There is no significant relationship on the mean rating of the respondents between “no picture” as negative reinforcement and influence on intellectually exceptional children.

Table 3: T-test Analysis of significant relationship on the mean rating of the respondents between “no picture” as negative reinforcement and influence on intellectually exceptional children

Teachers Perception	N	Mean \bar{X}	Standard Deviation	df	Std. Error	t-cal	t-crit	Decision
Male teachers	15	2.67	1.62	398	0.17	1.29	1.96	Accepted
Female teachers	25	2.84	1.68					

The analysis in Table 3 reveals that the t-cal of 0.13 is greater than the t-crit of 1.96. Therefore, the calculated t-ratio is not statistically significant at a 0.05 level of significance since it is smaller than the given critical value of t-ratio. So, the hypothesis 1 is thus accepted and the conclusion is that no significant relationship exists on the mean rating of the respondents between “undesired item” as a negative reinforcement and influence on the physically handicapped child.

Hypothesis 2: There is no significant relationship on the mean rating of the respondents between “undesired item” as a negative reinforcement and influence on the physically handicapped child.

Table 4: T-test Analysis of significant relationship on the mean rating of the respondents between “undesired item” as a negative reinforcement and influence on the physically handicapped child.

Teachers Perception	N	Mean X̄	Standard Deviation	df	Std. Error	t-cal	t-crit	Decision
Male teachers	15	2.67	1.62	398	0.17	1.29	1.96	Accepted
Female teachers	25	2.84	1.68					

The analysis in Table 4 reveals that the t-cal of 0.13 is greater than the t-crit of 1.96. Therefore, the calculated t-ratio is not statistically significant at a 0.05 level of significance since it is smaller than the given critical value of t-ratio. So, the hypothesis 1 is thus accepted and the conclusion is that no significant relationship exists on the mean rating of the respondents between “no picture” as negative reinforcement and influence on intellectually exceptional children.

DISCUSSION OF FINDINGS

Based on the data analysis, the findings of the study shows that the respondents accepted or agree that “no picture” as a negative reinforcement makes intellectually exceptional children to be emotionally weak. The table still indicates that the respondents rejected the point that intellectually exceptional children need negative reinforcement to encourage them. It is observed from the table that the respondents accepted the point that teachers are not advised to use negative reinforcement for the physically exceptional children hence they are to be encouraged through positive reinforcement. The findings of the study indicates that the respondents accepted or agree that showing undesired item to the physically handicapped children will not encourage them to learn well The table still shows that the respondents rejected the point that physically handicapped child learn better and faster through negative reinforcement. It is observed from the table that the respondents accepted the point that teachers should employ positive reinforcement instead of negative reinforcement in teaching physically handicapped children

CONCLUSION

Based on the findings of the study, the researcher concluded that “no picture” as a negative reinforcement has negative influence on the intellectually exceptional children in time of learning. The study also deduced that showing undesired items to the physically handicapped children has negative influence on them hence the teachers are encouraged to use positive reinforcement instead of negative reinforcement in teaching physically handicapped children.

RECOMMENDATIONS

Based on the findings of the study, the researcher made the following recommendations:

1. The physically challenged or handicapped school management should advice their teachers not to use “no picture” as a negative reinforcement hence it makes the students to be emotionally weak and discouraged.
2. The school management should organize an awareness campaign for the teachers on the uses of undesired items as negative reinforcement for the physically handicapped children.

REFERENCES

AFIRM Team. (2015). Reinforcement. Chapel Hill, NC: National Professional Development Center on Autism Spectrum Disorder, FPG Child Development Center, University of North Carolina. Retrieved from <http://afirm.fpg.unc.edu/Reinforcement>.

- Alberto, P. E., & Troutman, A. C. (2009). *Applied Behavior Analysis for Teachers (8th ed.)*. Upper Saddle River, New Jersey: Pearson Education, Inc.
- American Psychiatric Association (2013). *Diagnostic and Statistical Manual of Mental Disorders, ed. 5*. Arlington, VA, APA Press.
- Anand, R. (2006). Neuropsychiatry of learning disabilities. *Int J Neurology*, 6: 1.
- Anderson, K. (2013). *A History of the word, "Handicapped"*. London: Academia.
- Beadle-Brown, J., Mansell, J. & Kozma, A. (2007). Deinstitutionalization in intellectual disabilities. *Curr Opin Psychiat*, 20(5): 437-442.
- Beirne-Smith, M, Patton, J.R. & Kim, S.H. (2006). *Mental Retardation: An Introduction to Intellectual Disabilities, ed. 7*. Upper Saddle River, NJ, Pearson Merrill Prentice Hall.
- Berg, W.K., Wacker, D.P., & Steege, M.W. (1995). Best practices in assessment with persons who have severe or profound handicaps. In A. Thomas & J.Grimes (Eds.), *Best practices in school psychology-III* (3rd ed., pp.805-816). Washington, DC: National Association of School Psychologists.
- Hagopian, L. P., Boelter, E. W., & Jarmolowicz, D. P. (2011). Reinforcement schedule thinning following functional communication training: Review and recommendations. *Behavior Analysis in Practice*, 4(1), 4-16
- Harris, J.C. (2006). *Intellectual Disability: Understanding its Development, Causes, Classification, Evaluation and Treatment*. New York, Oxford University Press.
- Heward, W.L. (2012). *Exceptional Children: An Introduction to Special Education, ed. 10*. New York, Pearson.
- Inlow, J.K. & Restifo, L.L. (2004). Molecular and comparative genetics of mental retardation. *Genetics*, 166(2): 835-881.
- Kanner, L. (1960). Child psychiatry: Retrospect and prospect. *Am J Psychiat*, 117(1): 15-22.
- Kovas, Y. & Plomin, R. (2007). Learning abilities and disabilities: Generalist genes, specialist environments. *Curr Dir Psychol Sci*, 18(5): 284-288.
- Kronchak, L.A. & Ryan, T.G. (2007). The challenge of identifying gifted/learning-disabled students. *Int J Spec Ed*, 22(3): 44-53.
- Lange, Klaus W., Reichl, S., Lange, Katharina M., Tucha, Lara & Tucha, Oliver (2010). The history of attention deficit disorder. *ADHD*, 2(4): 241-255.
- Prutting, C. (1982). Scientific inquiry and communicative disorders: An emerging paradigm across six decades. In, Gallagher, T. & prutting, C. (eds). *Pragmatic assessment and intervention issues in language*. San Diego, College-Hill Press.
- Sonoma State University, School of Education, Department of Educational Leadership and Special Education (2014). *Exceptional Children*. Rohnert Park, CA.
- Treffert, D.A. (2009). The savant syndrome: An extraordinary condition. A synopsis: past, present, future. *Philos Trans Royal Soc B: Biol Sci*, 364(1522): 1351-1357.
- Volkmar, F.R. (2007). *Autism and Pervasive Developmental Disorders, ed. 2*. New York: Cambridge University Press.