Efficacy of Modelling and Contingency Management Techniques on Daily Living Skills Improvement of Pupils With Intellectual Disabilities in Ibadan, Nigeria

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Abstract

This study examined the efficacy of the two techniques-modelling and contingency management in the enhancement of daily living skills of pupils with moderate intellectual disability in Ibadan, Nigeria. A pretest, posttest, quasi-experimental research design was used in the study, 276 Basic 2-5 pupils of six special schools were purposively selected as sample based on their peculiar intellectual deficit and maladaptive behaviour. Two validated research instruments viz: Weschsler Intelligence Scale-Revised (Wisc-R) and Daily Living Skills Checklist (DLSC) were used to collected data from the respondents. The three hypotheses were tested at 0.05 level of significance. The results obtained indicated that there is a significant main effect on the variation in the respondents scores in daily living skills, ($F(1:266) = 653.64$; $P < 0.05$), intellectual ability of the participants has significant main effect on the results obtained from testing hypothesis 2. ($F(1:266) = 2.64$; $P > .05$). Also, Gender was found not to have any significant main effect in daily living skills improvement of the participant Pupils. Modelling and Contingency management techniques were effective in enhancing daily living skills of pupils with moderate intellectual disability. Special education teachers, curriculum planners, researchers and pupils would find the two techniques useful in the enhancement of daily living skills of pupils with moderate intellectual disability.

Keywords: daily living skill, moderate intellectual disability, modeling technique, contingency management techniques

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Introduction

Daily living skills are some of the important skills expected to be learnt and developed as behavior by pupils in the society. They are all in the areas of development that are integrated to everyday living. These include tasks such as feeding, sleeping, dressing, taking care of hygiene, washing, toileting, personal health and safety, grooming and other adaptive skills. All these may pose challenges for pupils with moderate intellectual disabilities.

It is rather worthwhile to note that if pupils with moderate intellectual disabilities must integrate properly in the society, it becomes necessary and mandatory to develop skills in daily living and other areas mentioned above. Several methods had been employed and useful results obtained in the training of daily living skills to the pupils with mental retardation; for example Eni-Olorunda (1998), Obani (2006) Ohiaeri (2006) and Adediran (2018) have investigated various physical and behavioural characteristics of pupils with intellectual disability which make daily living skills very difficult for them to acquire, so as to attain possible degree of self-management and independence.

The pupils with moderate intellectual disability, by comparison, because of their developmental delay, learn more slowly, less perfectly than their non-disabled peers. They therefore, require sound behaviour change strategies such as modeling to improve their daily living skills. Pupils with moderate intellectual disability are deficient in acquiring adaptive skills. In this context, they contend with the ability to effectively manage daily life tasks and social situations which are crucial for them to live independently and actively participate in their communities. These skills such as self-care (dressing, eating, hygiene) home living (cooking, cleaning) and occupational skills (work-related tasks).

Deficit in all these adaptive skills can hinder a pupil's ability to meet the demands of daily life and can lead to social isolation or reliance on others. Other adaptive daily living skills include practical skills like using money or credit card for transactions, identifying and resolving everyday challenges, task – all these are crucial for pupils with moderate intellectual disability.

Thus, Bandura (1997), the proponent of modeling technique posited that, the requirement for learning through modeling is the observation of a model. In the same vein, Adediran (2018) explained that much of our understanding of the world around us, including our language, dressing and customs come to us through our observation of the behaviours of others around us.

Modelling as viewed by Adediran (2018) is meant to bring about desirable or pleasant behaviours, but if it is not well handled, it can adversely affect the pupil. According to him, peer modeling can also prove effective as pupils learn appropriate behaviours by observing and imitating others. When a student observes one of his peers being rewarded for desirable behaviours, he tends to follow the example of the model, also unacceptable behaviours may be discouraged when students watch another receiving punishment for unpleasant behaviour.

Contingency Management theory was development by an Austrian Psychologist Fred Fiedler, in the 1960s. He studied leaders' personalities and characteristics, and came to the conclusion that leadership style, since it is formed through one's life experiences, is incredibly difficult, if not impossible to change.

Contingency management revolves around the description of the relationship between individual's behaviour (responses) and environmental events (stimuli). The term "Contingent" means that, there is a relationship between what individual does and the consequence (Slocum, 2017). In contingency management, there is a clearly specified agreement between a teacher (sometimes, parents) and students. In the contract are bonuses for outstanding performance and penalties for failing to meet the terms of the contract, the contract may be negotiated as well as having the expiration date.

For instance, Umoh (2018) explained that preferred leisure or recreational activities can be made contingent upon the performance of academic assignment; such rewards need to be immediate and frequent, particularly when stating this approach, little but often should be the guideline.

Contingency Management may be used as part of a treatment technique for pupils with moderate intellectual disability, this involves rewarding or reinforcing desired behavior in these pupils in a supportive manner, this would encourage positive behavior change. The dynamic and rewarding nature of contingency management therapy makes it a pivotal element of treatment for moderate intellectually disabled pupils. It is not just about making changes, it is about making changes that last, at least for a sustainable success.

Contingency management had been found to be widely used in educational practices with individuals at all levels of intellectual disability. Slocum (2017) discovered that if a teacher wishes to change or modify behaviours of pupils with intellectual disabilities through contingency management, he/she should reward the new desirable behavior. The new desirable behavior is thus strengthened while the old inappropriate behavior would be extinguished. The two behaviour change strategies-modelling and contingency management are part of the behaviour building techniques that are meant to increase the manifestation of weak and deficit behavior in individuals without cohesion (Adediran, 2018).

On the efficacy of modeling as a powerful tool in behavior modification strategy, Malhauser (2008) conducted a research on whether gender has significant effect on children's ability to remember and imitate a computer-recorded story they were exposed to, the result obtained indicated no significant gender effect in their disposition to imitate character in the story.

Eni-Olorunda (1998) used modeling technique on children with moderate mental retardation reading achievement and attitude towards reading, the results indicated a significant effect, but in the study, females were found with higher reading achievement ability than their male counterparts.

In another study, Athorp et al. (2022) used video-modelling via portable technology to improve daily living skill for a student with an intellectual disability in a University Campus-based transition programme. The results showed increased independence across four daily living skills. This study suggests that video modeling can be an appropriate intervention for more complex tasks as well.

In a study, contingency management treatment for substance use disorder on patients was reported by Petry et al. (2017) the results obtained indicated an efficacy in treating a variety of substance use disorder including stimulant, opioid, marijuana, and nicotine and polydrug use disorders.

In another study, Igborgbor (2014) had earlier used contingency management in a research carried out in old Bendel State, Nigeria effectively in the treatment of school truancy of 47 identified truants. Equally, Okoli (2019) had used contingency management effectively in the treatment of stealing among selected Nigeria youths. Okwori and Abekhale (2022) also discovered no significant main effect of gender on moral correctness using contingency management as counseling approach.

Purpose of Study

The study sought to investigate the efficacy of modeling and contingency management techniques in the enhancement of daily living skills of pupils with moderate mental retardation. It further examined gender implication on the acquisition of the skills.

Hypotheses

The following hypotheses were tested at 0.05 level of significance:

HO_1: There is no significant difference between pupils exposed to modeling techniques and those exposed to contingency management in the improvement of their daily living skills.

HO_2: There is no significant difference between the intellectual ability of the two groups in the improvement of daily living skills.

HO_3: There is no significant difference between the gender of the two groups in the improvement of daily living skills.

Research Methodology

A pretest, posttest, quasi-experimental research design was employed in this study.

The population of this study consists of all pupils with moderate intellectual disability in Ibadan. The samples selected were 276 primaries two to five pupils (four arms of classrooms per school) from six special schools out of eleven special schools that are concerned with offering services for the pupils with intellectual disability in Ibadan, Nigeria. They were all purposively selected because of their peculiar intellectual deficits and adaptive behavioural problems.

The experimental schools are broken into two groups; each group was exposed to modelling and contingency management techniques respectively;

Group 1: Cheshire Home School, Ibadan, Ijokodo School for the Handicapped, Ibadan and C.A.C. School for the Handicapped, Oniyanrin, Ibadan.

Group 2: H. L. A. School for the handicapped, Agodi, Ibadan, Omoyeni School for the Handicapped, Aperin Ibadan and I.M.G School for the Handicapped, Oke-Bola, Ibadan.

The instrument used in this study were Wechsler Intelligence Scale-Revised (WISC-R) for intelligence classification screening and a validated checklists tagged “Daily Living Skills Checklists” (DLSC) to measure the acquisition of the chosen daily living skills of the pupils. Daily living skills checklist (DLSC) was validated using back translation method (translating items from source language) and committee approach method (translators, intellectual disability unit specialists of the University of Ibadan, Nigeria and researchers to decide the best version of the items in the checklist). This gave face and content validation. Further, split

half method was used for scoring the checklist items and Spearman-Brown formular was applied as a reliability factor. The correlation coefficient of 0.76 was however obtained.

Two experimental groups were involved in the study that is, the modeling group and contingency management group. The researcher was assisted by class teachers in administering these two instruments on the pupils. The treatment involved using modeling techniques to enhance daily living skills of a group and using contingency management to enhance daily living skills of the second group. The teachers had earlier received training on the use of these two strategies from the researchers prior to the commencement of the treatment. After 6 weeks of treatment for the experimental groups, they were exposed to post-test.

Data Analyses

All the data collected in the study were analysed, using inferential statistics. The difference arising from the various treatment conditions in the post treatment were analysed. A 2 x 3 x 2 analysis of covariance was used along with Multiple classification analysis (MCA) for each dependent variable in the experimental groups where appropriate. All the hypotheses formulated were tested at 0.05 level of significance.

Results

The table below contained the results of the analysed data.

Table 1

Summary of Analysis of Covariance on the Post-test Pupils' Attainment Scores of Subjects According to Instruction Ability and Gender on Daily Living Skills

S/N	*Variable + Category*	*N*	*Unadjusted*	*Eta*	*Adjusted for Independent Deviation*	*Beta*
	Instruction					
1	Modeling	151	6.58		6.00	
2	Contingency Management	125	7.26		-7.18	
				.81		71.70
	Ability					
1	High	78	6.01		4.01	
2	Medium	140	-1.02		-19	
3	Low	58	-5.34		-4.91	
				.45		.34
	Gender					
1	Male	142	-1.18			
2	Female	134	1.29			
				.14		.03
	Multiple R Squared					.794
	Multiple R					.891

Table 1 shows the adjustment attainment mean score of the pupils. The experimental group, (modelling) had an adjusted mean score of 6.00 while the experimental group (contingency management) obtained -7.18. The results show that pupils in the contingency management group obtained a higher mean score of 31.09 and the modeling group obtained a lower mean score of 18.06.

The summary of ANCOVA as contained in Table 1 shows that ($F_{(1;266)}$ = 653.64. P < 0.05) the treatment was found to have significant main effect on the variations in respondents scores in daily living skills. Based on this result, one can suggest that there is a significant difference in the mean post-test scores of the groups; hence hypothesis 1 is not accepted.

Table 2

Multiple Classification Analysis of the Post-test Mean Scores of Pupils Attainment in Daily Living Skills According to Instruction, Ability and Gender

Source of Variation	***Sum of Squares***	***Df***	***Mean Square***	***F***	***Sig.F***
Pre-test	3282.161	1	3282.161	196.322	.000
Main effects	14548.149	4	3637.037	217.549	.0.00
Instruction	10927.68	1	10927.68	653.637	.000
Ability	2584.501	2	1292.25	77.296	.000
Gender	44.130	1	44.130	2.640	.105
2-way interaction	64.788	5	12.958	.775	.568
Instruction & Ability	35.400	2	17.700	1.059	.348
Instruction & Gender	4.543	1	4.543	.272	.603
Ability & Gender	21.982	1	21.982	.657	.519
3-way interaction	36.817	2	18.408	1.101	.334
Instruction x Ability x Gender	17929.715	10	1792.972	88.954	.000
Residual	4445.924	266	16.714		
Total	**22375.320**	**276**	**81.07**		

***** Significant P < 0.05

Grand mean = 24.68

Testing hypothesis two, the data collected with their corresponding analyzed result as presented in Table 1 were re-visited. Intellectual Ability is found to have significant main effect on the variations in pupils attainment scores ($F_{(2; 266)}$ = 77.29 P < .05).

Based on this result, hypothesis 2 is also not accepted.

The MCA Table (Table 2) shows that high ability group pupils obtained the highest mean scores of 29.39, the medium ability group obtained 25.16 and low ability group obtained the lowest mean score of 20.45.

Testing hypothesis 3 that “there is no significant difference between the gender of the two groups in the improvement of daily living skills”.

The data collected with their corresponding analyzed results as presented in Table 1 were revisited. Gender was found not to have any significant main effect, given that ($F_{(1;266)}$ = 2.64; P > 0.05). The null hypothesis is therefore not accepted.

The MCA Table (Table 2) shows that the female pupils obtained higher mean score of 25.71 while the male pupils obtained lower mean scores of 24.89.

Discussion of Findings

The major issue addressed in this study was the determination of the efficacy of modeling and contingency management strategies in the development of daily living skills of pupils with moderate intellectual disability. The findings indicated significant differences between the modeling groups and contingency management group, and among the intellectual ability grouping of the pupils. The contingency management was found to be more effective in enhancing daily living skills. The finding gives further empirical support on the usefulness of the strategy as it brought the desired improvement. (Adediran, 2018; Igborgbor, 2014, Okoli, 2019; Slocum, 2017).

However, the study shows that gender as a single factor has no significant main effect. This may be explained with the fact that the development of boys and girls proceeds more or less at an even pace as noted by Okwori and Abekhale (2022).

Also, the research result corroborated the findings of Malhauser (2008) where no significant main effect was confirmed on gender basis for pupils with intellectual disabilities in terms of learning by imitation and viewing a model as having powerful influence on him/her.

Conclusion

This study has been able to establish the efficacy of modeling and contingency management techniques in enhancing daily living skills of pupils with moderate intellectual disability. However, it was observed that, modeling technique by itself may not be sufficient enough to achieve desired performance in every situation. This is because, in teaching and learning new skills, verbal instruction may complement modeling thus increasing the likelihood that pupils would attend to relevant, rather than irrelevant features of model's performances.

In respect of the above assertion, it was observed that human and life models seen on television screen work effectively in teaching behavior modification than the use of non-human figure (puppets). This is because; the learner could and will always identify with living model than non-living model.

Second, contingency management technique, although, widely used in educational practices, could be effective in improving daily living skills of pupils with moderate intellectual disability. In this study contingency management proved to be more effective than modeling technique in the results, it was in the opinion of the researcher that the combination of the two techniques would be more effective and beneficial to pupils with moderate intellectual disability in improving their daily living skills.

Recommendations

In view of the various behavior characteristics of pupils with moderate intellectual disability, it is important that a suitable curriculum be provided and made use of. Such curriculum should address their level of cognition and task to be accomplished in improving their living skills within a given period of time.

Parents, teachers, care-givers and educationists counsellors should note that positive attitude is very important in motivating pupils to learn these basic skills, and no pupils should be abandoned or written off as being unable to learn. Modelling and contingency management proved effective with the researcher's findings, as such; the pupils with moderate intellectual disability are capable of learning and improving their daily living skills just like other non-retarded pupils.

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