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THE RELATIONSHIP BETWEEN GADGET ADDICTION AND VISUAL ACUITY IN ELEMENTARY SCHOOL STUDENT OF MLIRIP II MOJOKERTO

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ABSTRACT

Technology that is increasingly sophisticated is very influential in human life. Countless types of technology can be found in this modern era. One example of a very popular technology is gadgets. Psychologically, gadgets are easy to create addiction, game facilities that exist in the gadget make children always challenged to reach a higher level. The analytic correlation using crossectional study design was applied in this study. 95 respondents were involved in this study to examine the association between frequency, duration and types of gadgets and visual acuity in elementary school of mlirip II. The results showed that there were significant correlation between duration aand frequency using a gadget with visual acuity among students, results of p-value is 1,000> 0.005 then accept the null hypothesis which means the model is fit. So the model interprets the effect between duration, frequency and type of gadget on visual acuity. While Type of gadget has a negative correlation with visual acuity As for the type of gadget p-value is 0.624 where> 0.05 so that the type of gadget is not significant. If the duration of gadget usage increases, the decrease in visual acuity ratio increases by 5,299 times. If the frequency of gadget usage increases, the ratio of decreased visual acuity increases by 5,986 times. The level of accuracy of the model in this study was 85.3%. Eye disease problems in children can be prevented by early detection to find out the vision status in children supported by eye examination as a measuring instrument, namely snallen card (Snellen card).

Keywords

Duration, frequency, type of gadget and visual acuity

INTRODUCTION

Technology that is increasingly sophisticated is very influential in human life. Countless types of technology can be found in this modern era. One example of a very popular technology is gadgets. A few years ago the gadget was only used in the business community from the middle to upper level, but in today's era, the gadget is widely used by teenagers and even children (Bruner & Kumar, 2007). Today many parents give gadgets to their children to be friends when children are alone, while at that time parents are unable to interact and play with their children (De Lima & Castronuevo, 2016). Indirectly children become accustomed to playing and communicating with gadgets compared to the surrounding environment. There are also parents who assume that in this modern era a child should be introduced to a gadget even though the child does not understand what the gadget an is (Vincent Jonathan S., DR. Prayanto W.H., M.Sn., Hen Dian Yudani, S.T., 2011). Psychologically, gadgets are easy to create addiction, game facilities that exist in the gadget make children always challenged to reach a higher level. Waste and especially the eyes that are always used to view gadgets for a long time and without rest can result in asthenopia or eyes tired. Namely the pupils are slow to react to light, causing a decrease in visual acuity (Lindstrøm, Smout, Howell, & Bogstad, 2009). Gadget effects on children have increased widely so immediate treatment is needed (Saruji, Hassan, & Sulfeeza, 2017).

MATERIALS AND METHODS

The design used in this study is an analytic correlation with cross-sectional approach. The population in this study were all 4-5 grade students at SDN Mlirip II Mojokerto, namely a total of 95 respondents. The sampling technique is to use total sampling. The study was conducted at SDN Mlirip II Jetis, Mojokerto Regency. Respondents were given questionnaires to retrieve data on variable frequency, duration and type of gadget used then each respondent measured his visual acuity using a Snellen test carried out by refractions.

RESULTS

Table 1 Cross tabulation "Effect of duration, frequency and type of gadget on children's visual acuity in Mlirip II Elementary School, Mojokerto

Category	Visual acuity			
	Normal		Minus	
Duration of use gadget	n	%	n	%
Less than 1 hour/day	0	0	1	1.1
1-2 hour/day	0	0	2	2.1
3-4 hour/day	3	3.2	21	22.1
5-6 hour/day	11	11.6	40	42.1
More than 7 hours/day		0.0	17	17.9
The Frequency of use gadget				
1 hour/week	0	0	53	55.8
2-3 hour/week	3	3.2	26	27.4
6-7 hour/week	11	11.6	2	2.1
Type of Gadget				0
Laptop	0	0.0	6	6.3
Tablet	3	3.2	12	12.6
Smartphone/HP	9	9.5	53	55.8
PlayStation	2	2.1	10	10.5

Statistical data processing using Linear Regression with Hosmer Lemeshow Test with the results of p-value is 1,000>0,005 then accept the null hypothesis which means the model is fit. So the model interprets the effect between duration, frequency and type of gadget on visual acuity. Based on the wald p-value statistic value for the duration and frequency of gadget use is 0,000 where < 0,05 so the duration and frequency of gadget usage significantly affect visual acuity. As for the type of gadget p-value is 0,624 where > 0,05 so that the type of gadget is not significant and does not affect visual acuity. Based on the Exp (B) value, if the duration of gadget usage increases, the decrease in visual acuity ratio increases by 5,299 times. If the frequency of gadget usage increases, the ratio of decreased visual acuity increases by 5,986 times. Based on the results of the classification table is used to show how well the model prediction results are used also as a measure of model accuracy. A good model has high accuracy (> 70%). The level of accuracy of the model in this study was 85,3%.

DISCUSSION

The increasing frequency and duration of gadget usage will also increase the decrease in visual acuity. Visual acuity or visual acuity is a measure of the spatial resolution of a visual processing system (Mathers, Keyes, & Wright, 2010). Visual acuity according to optical professionals, tested by requiring people to identify is called optotypes - stylish letters with different font sizes. The general cause of low visual vision is a refractive error (ametropia), or an error in how light is refracted in the eyeball (Cotter et al., 2015). The causes of bias errors include irregularities in the shape of the eyeball, shape of the cornea, and reduced lens flexibility. In the case of pseudomyopia, irregularities are caused by muscle spasms. Refractive errors that are too high or too low (in relation to the length of the eyeball) are the cause of myopia or nearsightedness (hyperopia) (Lee, 2016).

Today is an era when technology in each field grows exponentially. High-tech gadgets have provided many ways to improve the quality of our lives (Vashist et al., 2015). The results of a similar study conducted that the duration of daily use of digital devices was significantly associated with the presence of dry eyes, blurred vision and eye fatigue besides that most respondents complained about musculoskeletal discomfort in the body including the neck, back bottom and upper back (Adriyanto & Dra. Taufik Suprihartini, 2016). Based on the result on the study that the iPad tablet with its glossy screen is very susceptible to glare resulting in significantly worse measurement acuity (about 2 lines of LogMAR). Based on the results of the above discussion, the wrong gadget usage habits (unsafe use gadget) can affect the visual state. The higher the use of gadgets, the greater the risk of decreased visual acuity. There are many benefits of using gadgets, but there are also bad effects of excessive use of gadgets (Anthes, 2016).

CONCLUSIONS

The fit model is that the model interprets the effect between duration, frequency and type of gadget on visual acuity. The duration and frequency of gadget usage significantly affect visual acuity. While for this type of gadget is not significant and does not affect visual acuity.

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