ASSESSING THE CRITERION VALIDITY OF THE LOOK PARADIGM

by

1427467

Word Count: 3983

Submitted in partial fulfilment
of the requirements for the degree of
MSci in Psychology

School of Psychology
University of Birmingham
Birmingham, UK
March 2017

Abstract

Due to shocking statistics regarding the prevalence and effects of childhood sexual abuse, the accurate assessment of individuals who are likely to commit such offences is crucial. One way of assessing such individuals is through viewing time instruments, which work on the assumption that people look longer at stimuli to which they are sexually attracted to. A recent viewing time assessment has been developed with several improvements to overcome issues with previous instruments – the LOOK. However, research on the LOOK's abilities is incredibly lacking, somewhat mixed in nature, and limited due to the nature of the ipsative data it studied. Therefore, the present research set out to establish the validity of the LOOK utilising absolute, as opposed to ipsative, data from the assessment in a sample of 1443 offending and 70 non-offending individuals. It was hypothesised that if the LOOK is a valid measure of sexual interest, it would be able to produce various within and between group differences in viewing times to different image categories between offending and non-offending participants with differing sexual interests. Hypotheses were largely supported, demonstrating that the LOOK can produce expected differences in viewing times within and between individuals. These findings have various implications for previous research conducted on the LOOK, which are discussed in detail. Despite some limitations and alternative interpretations that, for the most part, apply to all VT instruments, these findings strongly support the fact that the LOOK possesses criterion validity as a measure of sexual interest, further warranting its use in a forensic setting.

Assessing the Criterion Validity of the LOOK Paradigm

The rate of childhood sexual abuse is alarming - more than 47,000 sexual offences against children were recorded in the UK last year, an increase from previous years (Bentley, O'Hagan, Raff & Bhatti, 2016). Given this combined with the fact that childhood sexual abuse is linked to numerous detrimental psychological outcomes, such as post-traumatic stress disorder (Widom, 1999), the assessment and treatment of individuals likely to commit such offences is ever-increasingly crucial. The sexual preference hypothesis (Freund & Blanchard, 1989) suggests that sexually deviant behaviours arise from a preference for such behaviours over socially accepted ones. In line with this, deviant sexual interest (DSI) towards children has been consistently demonstrated to be one of the strongest predictors of future offending among child sex-offenders (e.g., Hanson & Morton-Bourgon, 2005). Therefore, one way of assessing potential child sex-offenders is by assessing their DSI, which in turn has implications in both legal decision-making and treatment evaluation (Zappalà, 2016).

DSI can be assessed through direct self-report measures, or through indirect attentional or physiological measures (e.g., Banse, Schmidt & Clarbour, 2010; Kalmus & Beech, 2005). Due to issues with self-report measures, such as a high susceptibility to faking (Laws, Hanson, Osborn & Greenbaum, 2000), great effort has been put into establishing the effectiveness of indirect measures of DSI which are less susceptible to deliberate manipulation (Banse et al., 2010).

One of the most widely studied indirect attentional measures of DSI are viewing time (VT) instruments (Worling, 2012). Such instruments are based on Singer's (1984) model of sexual arousal, which involves three sequential stages. The first stage is the "aesthetic response", involving an emotional response to an attractive individual leading to increased attention towards them. The "approach response" then progresses from this stage and

involves bodily movements towards the individual, leading to the "genital response", which involves an increase in genital tumescence. VT instruments are based on the aesthetic response and thus work on the assumption that people will look longer at images which they find attractive than those they find unattractive or neutral in nature (Kalmus & Beech, 2005). Abundant evidence supports this assumption, demonstrating that non-offenders look significantly longer at images of individuals matching their sexual preference than those that do not, both in heterosexual and homosexual samples (e.g., Israel & Strassberg, 2009; Zamansky, 1956). Such research clearly demonstrates that VT instruments are based on solid theoretical assumptions, and work well in assessing non-DSI.

Turning specifically to the assessment of DSI, a recent meta-analysis found that VT measures show moderate ability to discriminate between child offenders and non-child offenders, concluding that VT instruments are the best validated indirect latency-based measures of DSI towards children (Schmidt, Babchishin & Lehmann, 2017). Additionally, Banse et al. (2010) found a VT measure demonstrated greater discriminatory ability than an implicit-association test in assessing DSI in child sex-offenders, and possessed higher reliability, convergent validity and criterion validity. Such findings strongly illustrate that VT instruments work well in assessing DSI, supporting their use in a forensic context. In line with this, there are two instruments predominantly used as such.

One of the more widely used VT instruments is the Abel Assessment of Sexual Interest (AASI)/for Interest in Paraphilias (AAIP) (Abel, Huffman, Warberg & Holland, 1998; Akerman & Beech, 2012). Research has demonstrated encouraging data regarding this measure's discriminatory abilities, convergent validity and predictive validity (e.g. Abel, Jordan, Hand, Holland & Phipps, 2005; Gray et al., 2013; Letourneau, 2002; Tong, 2007). However, there are concerns over the measure's abilities in adolescent samples, and with how it controls and presents its data, for example raw score means and standard deviations are not

provided, which could lead to misinterpretation of the data (Cox, 2015; Fischer & Smith, 1999; Smith & Fischer, 1999). Due to such issues, the AASI did not recently meet the requirements for admissibility of scientific evidence in court (Ewing, 2006). Therefore, despite the widespread use of this measure, it has several issues, bringing to doubt its abilities.

Another currently used VT measure is the Affinity (Glasgow, Osborne & Croxen, 2003). The Affinity appears to possess good convergent validity, internal consistency and reliability and unlike the AASI reports untransformed raw scores and fares better in adolescent samples (Cloyd, 2007; Hansen, 2011; Mokros et al., 2012; Worling, 2006). However, Stephenson (2014) found the measure was not able to identify child sex-offenders as having DSIs any better than chance using a Fischer's Chi Square approach. Secondly, Fischer, Baird, Hansen, Stephenson and Veas-Wall (2012) found cognitive strategies can enable faking on the Affinity. Therefore, despite promising findings, the Affinity is not without issues, and consequently the need for a new VT measure of DSI is ever-increasing.

Due to such concerns, a new VT measure has been developed – the LOOK (LOOK Assessment, 2016). The LOOK incorporates various features to increase its quality and sensitivity over current VT instruments. Firstly, it is an iPad based instrument, making it more intuitive and easier to use (Baird, 2015). Secondly, it utilises an additional dot-finding task to increase the cognitive load associated with the assessment, which increases sensitivity and improves discrimination in VT measures, and may interfere with one's ability to use cognitive strategies to fake the instrument (Cox, 2015; Santtilà et al., 2009; Wright & Adams, 1994). Finally, the LOOK has more stimulus categories, allowing for more sensitive results (Baird, 2015). Therefore, the LOOK has several improvements over previous VT measures and should be a promising instrument.

However, the limited research conducted on the LOOK has produced mixed results.

Veas (2015) found that whist the LOOK possessed some sensitivity towards falsification in non-paedophilic individuals, participants could emulate the response patterns of the opposite gender. More worryingly, Cox (2015) found that when using Fischer's Chi-Square approach on LOOK profiles, the measure was unable to consistently differentiate offenders from non-offenders. Conversely, promising findings from Baird (2015) demonstrated the instrument produced similar patterns to previously established sexual attraction patterns in a non-offending sample, and possessed excellent temporal stability - better than that found for the Affinity (e.g. Hansen, 2011). As such, the current picture on the LOOK's abilities is rather mixed.

However, a potential limitation with this research conducted on the LOOK is that it utilised ipsative data, this being data reflecting intra-individual variation (Stephenson, 2014). Due to the nature of ipsative data, comparisons across individuals are difficult, and parametric analyses cannot safely be conducted on it (Cornwell & Dunlap, 1994; Stephenson, 2014). Furthermore, when raw data is converted to ipsative data, it may be distorted. Brown (2005) found that over 85% of Affinity profiles were distorted in such a way, suggesting ipsative profiles often inaccurately represent sustained visual attention. Due to such issues, the extent to which previous research on the LOOK reflects the measure's validity may be limited. One way of overcoming such issues to assess the LOOK's validity is to determine whether it can produce expected patterns in terms of participants' absolute, as opposed to ipsative, data. This should be determined given the currently mixed research on the instrument.

Aims and Hypotheses

Therefore, the current study aimed to test whether the LOOK could produce significant differences in absolute, as opposed to ipsatised, VTs to different image categories both *within* individuals (e.g. heterosexual men should look longer at female than male

images) and *between* individuals with differing sexual interests (e.g. heterosexual men should look longer at female images than heterosexual women). This was done by analysing the absolute VT data the LOOK produced for offending and non-offending individuals with differing sexual interests. Based on previous research in offenders and non-offenders (e.g., Baird, 2015; Israel & Strassberg, 2009; Mokros et al., 2012) and the fact that paedophilia and gerontophilia, a sexual interest in elderly individuals, are often considered paraphilic (Janssen, 2014; Krueger & Kaplan, 2001), if the LOOK is a valid measure of sexual interest, the following was hypothesised:

1. Sex-offenders will look significantly longer at child and elderly images than non-offenders.

2. Non-offenders will look significantly longer at adult images than elderly or child images.

3. Images matching non-offenders' gender preferences will be looked at significantly longer by such individuals than by non-offenders with differing gender preferences, but only when these images are adult aged.

4. Non-offenders will look significantly longer at images matching their gender preferences compared to images that do not, but only when these images are adult aged.

Hypotheses regarding within-group differences in offenders' VT were not made because previous research has suggested there is no single identifiable deviant response pattern on VT measures (e.g., Boardman, 2009). However, it is expected offenders should look longer at elderly and child images than non-offenders overall due to such interests generally being considered paraphilic (Janssen, 2014; Krueger & Kaplan, 2001).

Method

Participants

80 non-offending participants took part in the current study, most of whom were recruited from the University of Birmingham's Psychology Research Participation Scheme and were compensated with course credits for their time. However, due to issues with attaining an adequate sample size through this scheme, additional participants were recruited through purposive sampling, and received no direct compensation for taking part. Due to mid-study disruptions, data from four participants were excluded. Furthermore, due to research indicating bisexual individuals do not show significant differences in their VTs to male or female images (e.g., Ebsworth & Lalumière, 2012), data from six participants who reported being bisexual were excluded as it was felt their data may complicate analyses.

Therefore, data from 70 non-offending participants was utilised in this study, 40 of whom were female (M_{age} = 22.28, SD = 8.14) and 30 male (M_{age} = 31.23, SD = 16.34). Based on participants' reported sex and sexuality, their attraction, to men or women, was determined. Demographic information on non-offending participants can be seen in Table 1.

Table 1.
Demographic information for the non-offending sample (n=70).

Demographic	*n*	%
Gender		
Male	30	42.9
Female	40	57.1
Ethnicity		
White	51	72.9
Black	2	2.9
Asian	14	20.0
Other	3	4.3
Sexuality		
Heterosexual	67	95.7
Homosexual	3	4.3
Attraction		
Men	41	58.6
Women	29	41.4

LOOK data for 1443 sex offenders was also attained from the developers of the LOOK. Limited information was available for these individuals; however, all were male and had committed various sex-offences, predominantly against young individuals.

Design

The main design of the current study was a three-way 2 (attraction: to men/women – between participants) x 2 (image sex: male/female – within participants) x 3 (image age: child/adult/elderly – within participants) mixed design. Hypotheses involving offenders were not included in this main design and were tested using separate analyses due to limited information available on offenders.

Materials and Procedure

Participants were provided an information sheet prior to giving their informed consent. They then provided demographic information on their age, sex, ethnicity and sexuality before completing the LOOK (LOOK Assessment, 2016) on a 9.7 inch iPad Air.

The LOOK begins with a priming task requiring participants to rate their sexual preferences to seven different male/female age categories. Following this, the main task begins and serially presents participants 154 images from fourteen different categories: male/female elderly, mature adult, adult, juvenile, pre-juvenile, small child and infant. Examples of the images participants were presented, and what they were required to do upon image presentation, can be seen in Figure 1.

Figure 1. Examples of some of the images that participants were presented with in the

LOOK. Upon the presentation of an image participants were required to first locate and tap a

randomly generated dot presented in one of the four corners of the screen, following which

they rated the images' sexual attractiveness using the seven-point Likert scale located on the

bottom on the screen, ranging from very sexually unattractive to very sexually attractive, with

a score of 0 representing neutral. After this, the next image automatically appeared. Images

attained from the LOOK (LOOK Assessment, 2016).

Eleven images were presented to participants from each category. One image from

each category formed the first fourteen images, which served to familiarise participants with

the task, with no data being recorded for them. All images following this were presented

randomly to avoid order effects and were used in the actual assessment (Baird, 2015).

Multiple considerations during the development of the LOOK were taken to assure the

images in the assessment were varied and minimally biased for each category (Veas, 2015).

None of the images contain overtly sexual content, and were digitally enhanced to focus

participants' attention to the model (Veas, 2015).

Once participants had completed the above process for all images, which generally took seven minutes, their data was uploaded to a secure server.

The LOOK discreetly measures participants' VT in seconds from the time an image appears on the screen to when they make their rating of the image, producing a total VT towards each image. This data is retained in its raw state and presented alongside participants' ratings of each image and the proportion of time they spent looking at each image category.

Following data collection, participants' data was reduced from the LOOK's fourteen categories to six new categories, to ease data analysis and interpretation. Participant's VTs to images in the LOOK category of male/female 'elderly' were averaged to form their mean VT to male/female elderly images, their VTs to images in the LOOK categories of male/female 'mature adult', 'adult' and 'juvenile' were averaged to form their mean VTs to male/female adult images and their VTs to images in the LOOK categories of male/female 'pre-juvenile', 'small child' and 'infant' were averaged to form their mean VT to male/female child images. These decisions were based on previous research suggesting the elderly category and categories younger than juvenile are not targets of normal adult attraction (e.g., Baird, 2015; Crosby, 2008; Harmon, 2006). Participants overall mean VT to child, adult and elderly images, independent of sex, was also calculated. Subsequent analyses were conducted on participants' average VT to these categories, as opposed to their total VTs to them, as there was not an equal number of images in each category.

Ethical Considerations

Ethical approval was obtained from the University of Birmingham's School of Psychology Ethics Committee and participants' data were anonymised. Participants were provided with the contact information of the School's Welfare Officer due to the sensitive nature of the study, and assured they had the right to withdraw at any point without

consequence.

Results

Test of Hypothesis 1

As both sex-offenders' and non-offenders' average VTs to adult, elderly and child images were significantly skewed, and a data transformation did not correct for this in the offender data, non-parametric Mann Whitney-U tests were run to test hypothesis one. In line with the hypothesis, results revealed that sex-offenders' average VT was significantly longer to elderly (Mdn = 1.95s, U = 39996, Z = 2.944, p = .003), child (Mdn = 1.96s, U = 35044, Z = 4.331, p < .001) and also adult (Mdn = 2.55s, U = 33708, Z = 4.705, p < .001) images than non-offenders' (Mdn = 1.75s, 1.67s and 2.16s respectively).

Test of Hypothesis 2

To test the remaining hypotheses, parametric analyses were required. As non-offenders' data were significantly skewed, they were negatively inversely transformed which substantially corrected for normality. Non-offenders' negative inverse mean average VTs to each stimulus category can be seen in Table 2. Subsequent analyses were conducted on this transformed data.

Table 2.
Negative inverse transformed mean average VT to each stimulus category for non-offending participants attracted to men and women. Standard deviation is displayed in parentheses.

	Attraction	
Image Category	To Men	To Women
Elderly Male	-.56 (.12)	-.56 (.15)
Elderly Female	-.57 (.13)	-.52 (.15)
Adult Male	-.44 (.09)	-.53 (.15)
Adult Female	-.54 (.12)	-.40 (.12)
Child Male	-.59 (.12)	-.57 (.15)
Child Female	-.58 (.12)	-.56 (.15)

A three-way mixed analysis of variance (ANOVA), based on the main experimental design, was then run on non-offenders' transformed average VTs to each stimulus category. Results of the ANOVA revealed a significant main effect of image age, $F(1.837, 124.886) = 97.520; p < .001$, with Bonferroni corrected post-hoc tests revealing that non-offenders' transformed average VT was significantly longer to adult images ($M = -.48$) than both elderly ($M = -.55, p < .001$) and child ($M = -.57, p < .001$) images, in line with hypothesis one. Furthermore, non-offenders' transformed average VT was significantly longer to elderly than child images ($p = .005$).

Test of Hypothesis 3

The previously mentioned ANOVA also revealed a significant interaction between image sex and participant attraction, $F(1, 68) = 38.181, p < .001$, that was further qualified by image age, revealed by a significant three-way interaction between image sex, image age and participant attraction, $F(2, 136) = 42.108; p < .001$. Further two-way repeated measures ANOVAs revealed significant image sex by image age interactions for both the group of

participants attracted to women, $F(2, 56) = 20.153$; $p < .001$, and the group of participants

attracted to men, $F(2, 80) = 22.605$; $p < .001$.

Analyses of simple effects revealed findings in line with hypothesis three. Details of

the results of these analyses can be seen in Figure 2. Subsequent figures represent

participants' untransformed mean average VTs simply to aid their interpretation, however all

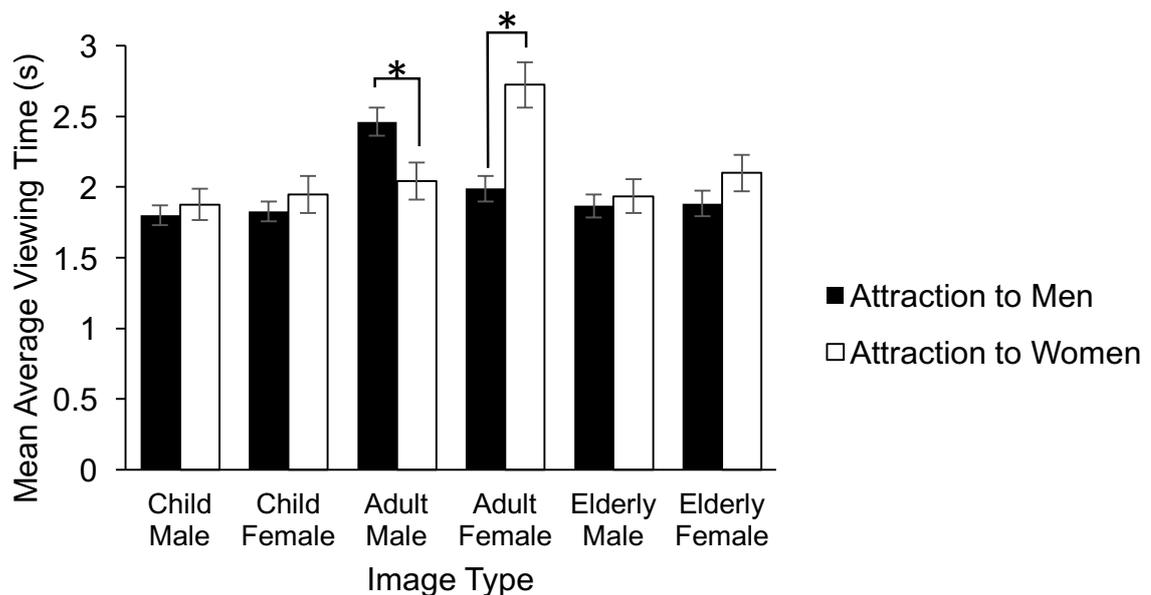significant differences highlighted are those found for transformed data.

Figure 2. Mean average VT (in s) as a function of image type and participant attraction. Tests

of simple effects revealed female images were looked at significantly longer, in terms of

transformed average VTs towards them, by participants attracted to women than those

attracted to men only when they were adult aged ($p < .001$), with no significant differences

between participants' VTs to female images when they were child ($p = .649$) or elderly ($p =$

.212) aged. Similarly, male images were looked at significantly longer, in terms of

transformed average VTs towards them, by participants attracted to men than those attracted

to women only when they were adult aged ($p = .005$), with no significant differences between

participants' VTs to male images when they were child ($p = .728$) or elderly ($p = .924$) aged.

Error bars represent standard error. *p = at least .001.

Test of Hypothesis 4

Regarding the previously mentioned ANOVAs, further analyses of simple effects revealed findings mostly in line with hypothesis four. Details of the results of these analyses can be seen in Figures 3 and 4.
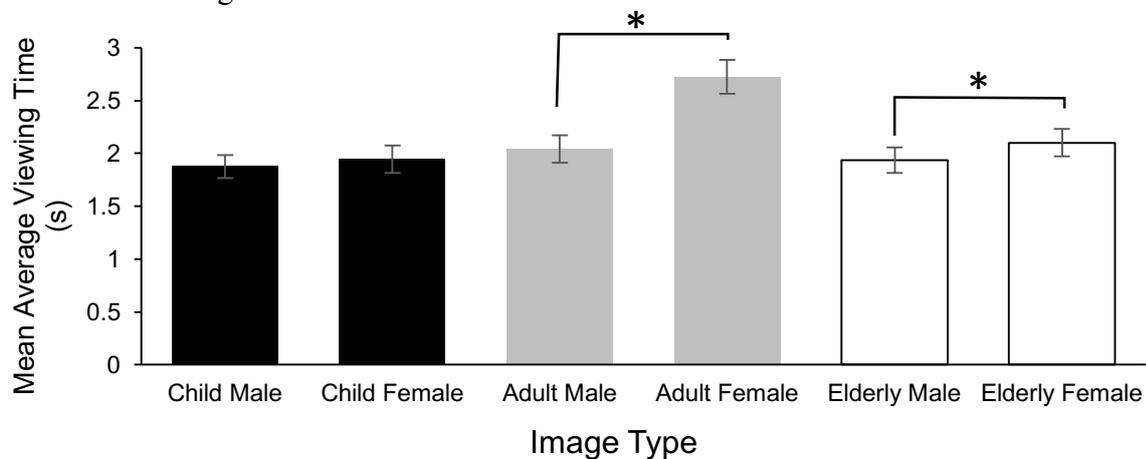

Figure 3. Mean average VT (in s) as a function of image sex for participants attracted to women. Tests of simple effects revealed that participants attracted to women had a significantly longer transformed average VT to female images than male images when they were adult ($p < .001$) and elderly aged ($p = .043$), with no significant differences in their transformed average VT to male and female images being found when they were child aged ($p = .086$). Error bars represent standard error. *p = at least $< .05$.
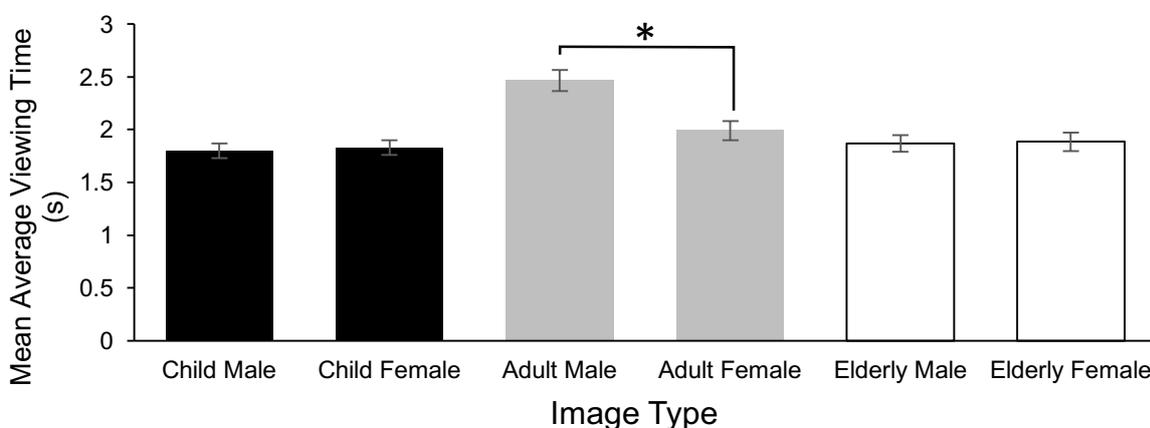

Figure 4. Mean average VT (in s) as a function of image sex for participants attracted to men. Tests of simple effects revealed that participants attracted to men had a significantly longer transformed average VT to male than female images when they were adult aged ($p < .001$),

with no significant differences in their transformed average VT to male and female images being found when they were elderly ($p = .853$) or child ($p = .082$) aged. Error bars represent standard error. *p = at least $< .001$.

Discussion

The current study sought to assess the criterion validity of the LOOK by establishing whether it could produce expected differences within and between participants' absolute VT to different image categories. In line with between-group hypotheses, LOOK profiles revealed that sex-offenders looked longer at elderly and child images than non-offenders, and images matching non-offenders' gender preferences were looked at longer by these individuals than by non-offenders with differing gender preferences, but only when such images were adult aged. Mostly in line with within-group hypotheses, LOOK profiles revealed that non-offenders looked longer at adult than child or elderly images, and at images matching their gender preferences than those that did not when they were adult aged, for those attracted to men, and when they were adult and elderly aged, for those attracted to women. These findings largely suggest the LOOK possesses criterion validity as a measure of sexual interest, suggesting it should be a useful diagnostic tool.

The present findings have various implications for previous research on the LOOK. Firstly, they corroborate Baird (2015) who found the LOOK produced similar non-offending ipsative attraction patterns to previous research, demonstrating the LOOK also largely produces expected absolute VT patterns. However, these findings are somewhat opposing to Cox (2015) who found the LOOK was unable to differentiate between offenders and non-offenders, as they suggest the LOOK *can* produce significant differences in absolute VTs between such individuals. The present findings may illuminate why Cox (2015) found this unexpected finding, as it was found that sex-offenders in the current study not only looked longer at child and elderly images than non-offenders, but also adult images. This

corroborates previous research demonstrating that child sex-offenders also show a generally higher level of socially accepted sexual interest in adults than non-offenders (e.g., Banse et al., 2010). Since ipsative data reflects the proportion of time spent looking at one category relative to another (Cattell, 1944), if offenders show increased sexual interest to *all* stimulus-age categories relative to non-offenders, as suggested by the present findings, this may reduce differences between offenders' and non-offenders' ipsatised profiles. This could explain Cox's (2015) findings, as they utilised such data. Another factor potentially contributing to Cox's (2015) unexpected findings is the statistical method they used to assess the LOOK. A Fischer's Chi Square approach was used to do this, however, research on the Affinity has demonstrated that a deviance differential approach may be slightly superior to this method in differentiating offenders from non-offenders (Caswell, 2009). Therefore, a combination of both the type of data (ipsative) and the statistical analysis that Cox (2015) used when studying the LOOK may partly explain their unexpected findings.

However, it was unexpected that non-offenders attracted to women would look significantly longer at elderly female than elderly male images in the current study, suggesting they looked longer than expected at elderly female images. Interestingly, Cox (2015) also found that non-offenders looked longer than expected at such images. One possible implication of this finding is that the LOOK is not a completely valid measure of sexual interest, since it would not be expected given that most of the sample were young adult university students and gerontophilia is generally considered paraphilic (Janssen, 2014). However, it must be noted that research into gerontophilia is lacking and so relatively little is known about it (Janssen, 2014). Therefore, this finding may suggest that a sexual interest in the elderly, specifically for those attracted to women, may simply not be as deviant as expected. This may also explain why non-offenders looked longer at elderly images than child images in the current study. Furthermore, even if this finding is taken as indicative of

the LOOK's validity, it was likely at least partly caused by an issue inherent in all VT measures, rather than the LOOK specifically. This is because VT instruments seem to be poorer measures of within than between-category sexual interest (i.e. differentiating sexual interest between two different women vs. between a man and a woman) (Israel & Strassberg, 2009). As the distinction between elderly and adult females is a within category distinction, this may go some way in explaining this finding. Therefore, it is not clear whether this finding has implications for the deviance of gerontophilia or for the validity of the LOOK. Even if taken as indicative of the latter, it is likely partly caused by an issue inherent in all VT measures.

Limitations

There are some limitations to the present study. Firstly, as with all sexuality research, a sampling bias may have occurred in the present non-offending sample. Participants who volunteer in such research tend to hold more sex-positive attitudes and be more sexually experienced than non-volunteers (Strassberg & Lowe, 1995). Although it is unknown how this may have affected the current results (Israel & Strassberg, 2009), this may influence the generalizability of these findings to individuals who do not participate in such research.

Secondly, some non-offending participants in the current study stopped mid-assessment to, for example, have a drink. Therefore, the experimenter was present with participants as they completed the assessment to record any such disruptions. However, this may have influenced the present findings as it has been shown that participants' VT to sexual stimuli is significantly shorter in the presence of others (Brown, Amoroso, Ware, Pruesse, and Pilkey, 1973). It is therefore likely that non-offenders may have spent longer looking at the images in the current study had they completed the LOOK alone, which may have influenced the pattern of results attained.

Finally, it is unclear how much one's delay in VT in VT instruments is completely related to one's sexual preference. For example, it is possible such delays may also be related to factors such as physical attractiveness of images unrelated to sexual preference, or image novelty or complexity (Stephenson, 2014). If this is the case, this clearly limits the extent to which the current findings provide evidence for the LOOK's validity as a measure of sexual interest.

Future Research Suggestions

Future research should focus on further clarifying the discriminative abilities of the LOOK. This should perhaps be done by replicating the rationale of Cox (2005), utilising absolute data and a deviance differential approach to analysis, as both these factors may have influenced their unexpected findings. For VT measures more broadly, research should focus on clarifying the extent to which delays in VT are indeed related to sexual preference. If it is found that a significant proportion of such delays is related to other factors, this clearly has important implications for the use of VT measures as diagnostic tools. Finally, future research should focus on investigating whether the unexpected finding that individuals attracted to women looked longer than expected at elderly females reflects issues with the validity of the LOOK, or conceptual implications for the deviance of gerontophilia.

Conclusion

In summary, the current research suggests the LOOK possesses criterion validity as a measure of sexual interest, and is largely able to produce expected differences in absolute VT between and within individuals with differing sexual interests. Although there are some potential limitations of these findings, these mostly apply to other VT instruments also. Therefore, given the methodological improvements of the LOOK, it should be a useful and preferential instrument to be used in a forensic setting, at least compared to existing instruments. The present findings also shine some light on previous inconclusive research on

the LOOK, suggesting an issue with such research may have been the ipsative data it utilised.

Whilst assessments of DSI such as the LOOK should not be used to assess offenders in

isolation, due to various causes of offending besides DSI (e.g., Worling, 2006), it seems the

LOOK should function well as part of a battery of assessments in a forensic setting.

Therefore, although the present findings will need corroborating with future research, they

suggest the future of the LOOK is rather bright.

References

Abel, G.G., Huffman, J., Warberg, B., & Holland, C.L. (1998). Visual reaction time and plethysmography as measures of sexual interest in child molesters. *Sexual Abuse: A Journal of Research and Treatment, 10*, 81–95.

Abel, G. G., Jordan, A., Hand, C. G., Holland, L. A., & Phipps, A. (2001). Classification models of child molesters utilizing the Abel Assessment for sexual interest[TM]. *Child Abuse and Neglect*, *25*, 703-718.

Akerman, G., & Beech, A.R. (2012). A systematic review of measures of deviant sexual interest and arousal. *Psychiatry, Psychology and Law, 19,* 118-143.

Baird, S.M. (2015). *Expected profiles and temporal stability of the LOOK.* (Unpublished doctoral dissertation), Brigham Young University, Provo, Utah.

Banse, R., Schmidt, A. F., & Clarbour, J. (2010). Indirect measures of sexual interest in child sex offenders: a multimethod approach. *Criminal Justice and Behavior*, *37*, 319-335.

Bentley, H., O'Hagan, O., Raff, A., & Bhatti, I. (2016). *How safe are our children? The most comprehensive overview of child protection in the UK 2016.* London: NSPCC.

Boardman, R.D.C. (2009). *Creating an expected profile for Affinity 2.5 from a sample of non-pedophilic, exclusively heterosexual, college age males.* (Unpublished doctoral dissertation). Brigham Young University, Provo, Utah.

Brown, A.J. (2005). *Ipsative score distortion on Affinity 2.0.* (Unpublished doctoral dissertation). Brigham Young University, Provo, Utah.

Brown, M., Amoroso, D., Ware, E., Pruesse, M., & Pilkey, D. (1973). Factors affecting viewing time of pornography. *Journal of Social Psychology, 90,* 125-135.

Caswell, B.C. (2009). *Receiver operating characteristic (ROC) curve analysis of Affinity profiles.* (Unpublished doctoral dissertation). Brigham Young University, Provo, Utah.

Cattell, R. B. (1944). Psychological measurement: Normative, ipsative, interactive. *Psychological Review, 51*, 292-303.

Cloyd, L.L. (2007). *Relationship between key variables in penile plethysmograph and viewing time measures of sexual arousal in sex offending adult males.* (Unpublished doctoral dissertation), University of Miami, Miami, Florida.

Cornwell, J. M., & Dunlap, W. P. (1994). On the questionable soundness of factoring ipsative data: A response to Saville & Willson (1991). *Journal of Occupational and Organizational Psychology, 67*, 89-100.

Cox, J.W. (2015). *Predictive validity of the LOOK.* (Unpublished doctoral dissertation). Brigham Young University, Provo, Utah.

Crosby, C. D. (2008). *Non-pedophilic heterosexual male response to Affinity 2.0.* (Unpublished doctoral dissertation), Brigham Young University, Provo, Utah.

Ebsworth, M., & Lalumière, M. L. (2012). Viewing time as a measure of bisexual sexual interest. *Archives of Sexual Behavior*, *41*, 161-172.

Ewing, C.P. (2006). Testing tool in question. *Monitor on Psychology, 37,* 61.

Fischer, L., Baird, S., Hansen, K., Stephenson, H., & Veas-Wall, R. (2012, October). Affinity 2.5. In L. Fischer (Chair), *Falsification of the Affinity 2.5*. Symposium conducted at the 31st Annual Research and Treatment Conference of the Association for the Treatment of Sexual Abuse, Denver, CO.

Fischer, L., & Smith, G. (1999). Statistical adequacy of the Abel Assessment for Interest in Paraphilias. *Sexual Abuse: A Journal of Research and Treatment*, *11*, 195-205.

Freund, K., & Blanchard, R. (1989). Phallometric diagnosis of pedophilia. *Journal of Consulting and Clinical Psychology, 57*, 100–105.

Glasgow, D.V., Osborne, A., & Croxen, J. (2003). An assessment tool for investigating paedophilic sexual interest using viewing time: An application of a single case methodology. *British Journal of Learning Disabilities, 31*, 96–102.

Gray, S. R., Abel, G. G., Jordan, A., Garby, T., Wiegel, M., & Harlow, N. (2013). Visual Reaction Time™ as a predictor of sexual offense recidivism. *Sexual Abuse: A Journal of Research and Treatment*, *27*, 173-188.

Hansen, K.S.W. (2011). *Reliability and a measure of sexual Interest: examining the temporal stability of scores on Affinity 2.5.* (Unpublished doctoral dissertation). Brigham Young University, Provo, Utah.

Hanson, R.K., & Morton-Bourgon, K.E. (2005). The characteristics of persistent sexual offenders: A meta-analysis of recidivism studies. *Journal of Consulting and Clinical Psychology, 73,* 1154–1163.

Harmon, K. (2006*). Non-pedophilic heterosexual female response to the Affinity 2.0.* Unpublished doctoral dissertation, Brigham Young University, Provo, Utah

Israel, E., & Strassberg, D.S. (2009). Viewing time as an objective measure of sexual interest in heterosexual men and women. *Archives of Sexual Behavior, 38,* 551–558.

Janssen, D. F. (2014). "Gerontophilia": A forensic archaism. *Sexual Offender Treatment*, *9*. Retrieved from http://www.sexual-offender-treatment.org/130.html

Kalmus, E., & Beech, A.R. (2005). Forensic assessment of sexual interest: A review. *Aggression and Violent Behaviour, 10,* 193-217.

Krueger, R. B., & Kaplan, M. S. (2001). The paraphilic and hypersexual disorders: An overview. *Journal of Psychiatric Practice*, *7*, 391-403.

Laws, D.R., Hanson, R.K., Osborn, C.A., & Greenbaum, P.E. (2000). Classification of child molesters by plethysmographic assessment of sexual arousal and a self-report measure of sexual preference. *Journal of Interpersonal Violence, 15,* 1297–1312.

Letourneau, E. J. (2002). A comparison of objective measures of sexual arousal and interest: Visual reaction time and penile plethysmography. *Sexual Abuse: A Journal of Research and Treatment, 14,* 207-223.

LOOK Assessment. (2016). LOOK (Version 3.1) [Mobile application software]. Retrieved from http://itunes.apple.com

Mokros, A., Gebhard, M., Heinz, V., Marschall, R. W., Nitschke, J., Glasgow, D. V., ... & Laws, D. R. (2012). Computerized assessment of pedophilic sexual interest through self-report and viewing time: reliability, validity, and classification accuracy of the Affinity program. *Sexual Abuse: A Journal of Research and Treatment, 25,* 230-258.

Santtilà, P., Mokros, A., Viljanen, K., Koivisto, M., Sandnabba, N. K., Zappalà, A., & Osterheider, M. (2009). Assessment of sexual interest using a choice reaction time task and priming: A feasibility study. *Legal and Criminological Psychology, 14*, 65–82.

Schmidt, A. F., Babchishin, K. M., & Lehmann, R. J. (2017). A meta-analysis of viewing time measures of sexual interest in children. *Archives of Sexual Behavior, 46,* 287-300.

Singer, B. (1984). Conceptualizing sexual arousal and attraction. *The Journal of Sex Research, 20, 2*30–240.

Smith, G., & Fischer, L. (1999). Assessment of juvenile sexual offenders: Reliability and validity of the Abel Assessment for Interest in Paraphilias. *Sexual Abuse: A Journal of Research and Treatment, 11*, 207-216.

Stephenson, H.L. (2014). *Screening and diagnostic validity of Affinity 2.5.* (Unpublished doctoral dissertation). Brigham Young University, Provo, Utah.

Strassberg, D.S., & Lowe, K. (1995). Volunteer bias in sexuality research. *Archives of Sexual Behavior, 24*, 369-382.

Tong, D. (2007). The penile plethysmograph, Abel assessment for sexual interest, and MSI-II: Are they speaking the same language? *The American Journal of family therapy*, *35*, 187-202.

Veas, R.A. (2015). *Falsification of the LOOK.* (Unpublished doctoral dissertation). Brigham Young University, Provo, Utah.

Widom, C. P. (1999). Posttraumatic stress disorder in abused and neglected children grown up. *American Journal of Psychiatry, 156,* 1223–1227.

Worling, J. R. (2006). Assessing sexual arousal with adolescent males who have offended sexually: Self-report and unobtrusively measured viewing time. *Sexual Abuse: A Journal of Research and Treatment*, *18*, 383-400.

Worling, J.R. (2012) The assessment and treatment of deviant sexual arousal with adolescents who have offended sexually, *Journal of Sexual Aggression, 18,* 36-63,

Wright, L. E., & Adams, H. E. (1994). Assessment of sexual preference using a choice reaction time task. *Journal of Psychopathology and Behavioral Assessment, 16*, 221–231.

Zamansky, H. S. (1956). A technique for measuring homosexual tendencies. *Journal of Personality, 24*, 436–438.

Zappalà, A. (2016). *Separating deviant and non-deviant sexual preferences with a dual-target rapid serial visual presentation task.* (Unpublished master's thesis). Åbo Akademi University, Turku, Finland.

Appendix A

Participant Information Sheet

Title of Research project:
Assessment of sexual interest in adult men and women, using the LOOK paradigm.

We would like to invite you to take part in the current research study. Before you decide to take part, it is essential for you to understand why the present research is being conducted and what it will involve for you. Please take the time to read the following information carefully and please ask the researcher if anything is unclear or if you would like more information.

What is the purpose of this study and why am I being asked to take part?
The current study will involve looking at your sexual interest towards certain people and is investigating the robustness of a new measure of sexual interest, which has very beneficial implications for a variety of settings.

What will I be asked to do if I take part?
If you are happy to take part in the study, you will first be provided with a consent form and demographics sheet to fill out. You will then be asked to complete a task provided to you on an iPad, this will involve you searching for some dots on a screen and rating some people's attractiveness. All we ask is that you try to keep focussed on the task as much as possible throughout the study. If anything is unclear during the task, please indicate this to the researcher who will be able to assist you.

Your participation in the current study should take no longer than 25 minutes.

Do I have to take part?
Your participation in the current study is completely voluntary. If you decide to take part, you are free to withdraw at any time without reason or consequence. Additionally, you are free to withdraw your data from study after your completion of the study until the data is published, and you can do this by contacting the researcher, who's details will be provided at the end of this information sheet.

What are the possible benefits and risk of taking part?
There are no direct benefits to you in taking part in this study, however we hope that this research will increase our understanding of human sexuality. There is no direct risk involved. However, you may feel uncomfortable about reporting your sexual interests or rating images of people. However, please be assured your data will be handled with upmost confidence and confidentiality, and your answers will not be seen by other people.

What happens to the responses I give?
All your information collected as part of this study is completely confidential. You will be assigned a unique identification code which you will write on your consent form, which will then be stored separate from your responses on the task. This number is used to ensure your confidentiality and enables us to destroy your data if you wish to withdraw from the study. Your responses on the task are not linked with your name in any other way and will not be traceable to you as your responses will be looked at in combination with other participant's responses. Your data will be stored until the end of the project, after which it will be deleted.

Who is organising this research?
This study is organised by the School of Psychology at the University of Birmingham and has been approved by the School of Psychology Ethics Committee.

Who can I speak to informed I am concerned about anything regarding this study?
You can contact the college's Welfare Office Dr Yolanda Martinez at leswelfare@bham.ac.uk or 0121 414 3822.

Who can I ask for further information about the study?
For further information please contact the supervisor of this study:

Dr Anthony Beech   +44 (0)121 414 7215   a.r.beech@bham.ac.uk

Thank you for taking the time to read this information sheet.

Appendix B

Participant Consent Form

Title of Research Project:
Assessment of sexual interest in adult men and women, using the LOOK paradigm.

Name of Principle Investigator: Anthony Beech

Participant identification ⬚ **number:**

1. I confirm that I have read and understand the information sheet for the above
    study. I have had the opportunity to consider the information, ask questions and
    have had these answered satisfactorily.   ⬚

2. I understand that my participation is voluntary and that I am free to withdraw at
    any time without giving any reason. I understand that I can withdraw my data at
    any time during the experiment and after completion of the study until the data is
    published.   ⬚

3. I understand that data collected during the study may be looked at by individuals
    from the University of Birmingham and from regulatory authorities where it is
    relevant to my taking part in this research. I give permission for these individuals
    to have access to my data.   ⬚

4. I agree to take part in the above study.   ⬚

_____   _____   _____
Name of Participant   Date   Signature

_____   _____   _____
Name of Person   Date   Signature
taking consent

Appendix C

Demographics Sheet

Participant Identification Number: _____

Age: _____

Gender (please circle):

                             Male   Female

Ethnicity: _____

Sexuality (please circle):

              Heterosexual   Homosexual   Bisexual   Other

Appendix D

Project Outline

The rate of childhood sexual abuse is alarming – just last year more than 47,000 sexual offences against children were recorded in the UK, an increase from previous years (Bentley, O'Hagan, Raff & Bhatti, 2016). Given such worrying statistics in combination with the fact that childhood sexual abuse has been linked to numerous detrimental psychological outcomes, such as post-traumatic stress disorder, anxiety and mood disorders (e.g. Levitan, Rector, Sheldon, & Goering, 2003; Widom, 1999), the assessment and treatment of individuals who may be likely to commit such offences is ever-increasingly crucial.

The sexual preference hypothesis (Freund & Blanchard, 1989) states sexually deviant behaviours arise from a preference for such behaviours over socially accepted ones. In line with this, deviant sexual interest (DSI) has consistently demonstrated to be one of the strongest predictors of future offending (e.g, Hanson & Morton-Bourgon, 2005). Therefore, one way of assessing potential child offenders is by assessing their DSI, which has implications in both legal decision-making and treatment evaluation (Zappalà, 2016).

DSI can be assessed through direct self-report measures or through indirect attentional or physiological measures (Banse, Schmidt & Clarbour, 2010; Kalmus & Beech, 2005). Due to several issues with self-report measure of DSI, such as a high susceptibility to faking (Laws, Hanson, Osborn & Greenbaum, 2000), great effort has been put into establishing the effectiveness of indirect measures of DSI which are less susceptible to deliberate manipulation (Banse, Schmidt & Clarbour, 2010).

The most widely used physiological measure of DSI is penile plethysmography (PPG) (Banse, Schmidt & Clarbour, 2010). This instrument measures changes in penile tumescence in response to visual or auditory stimuli, with the underlying assumption that the penile response indicates sexual arousal, and thus can be used to infer sexual interest (Akerman &

Beech, 2012; Zappalà, 2016). Whilst the PPG is an objective measure, and is able to differentiate between sexual offenders, it has several issues such as a lack of standardisation, poor test-retest reliability, generalizability issues, susceptibility to faking, it's time consuming, costly and invasive nature, and concerns with its use in adolescents (Akerman & Beech, 2012; Israel & Strassberg, 2009; Kalmus & Beech, 2005; Looman, Abracen, Maillet & DiFazio, 1998; Stinson & Becker, 2008; Worling, 2012). Due to such issues, research has focused on establishing the benefits of less easily faked, more unobtrusive attentional measures of DSI (Israel & Strassberg, 2009).

Viewing time (VT) instruments are one of the most widely studied attentional measures of DSI (Worling, 2012). Such instruments assume people will look longer at stimuli to which they are sexually attracted to relative to stimuli which they are not (Snowden, Craig & Gray, 2011). Abundant evidence supports this assumption. For example, Zamansky (1956) discovered homosexual men looked longer at images of naked men than naked women, with the reverse pattern being seen in homosexual women. Similarly, Israel and Strassberg (2009) found heterosexual individuals spent significantly longer looking at opposite sex images than same sex images. Additionally, Bourke & Gormley (2012) found VT instruments produce more consistent results in differentiating sexual interest in non-offenders than a pictorial Stroop task. Such findings demonstrate that VT measures are based on a concrete assumption, and are able to assess sexual interest in non-deviant populations.

Research has also demonstrated that VT measures perform well in assessing DSI, out-performing some other non-physiological measures. For example, Gress (2005) found a VT instrument to be superior to a card-sort procedure in identifying the gender preferences of adult male sexual offenders, and also in identifying those with child victims. Similarly, Banse, Schmidt and Clarbour (2010) found a VT measure demonstrated greater discriminatory ability than an implicit association-test in assessing sexual interest in child sex

offenders and had higher reliability and convergent and criterion validity also. Such results strongly support the use of VT instruments in a forensic setting, and there are two instruments used as such.

One of the most widely used VT instruments is the Abel Assessment of Sexual Interest (AASI)/for Interest in Paraphilias (AAIP) (Abel, Huffman, Warberg & Holland, 1998; Akerman & Beech, 2012). Research has demonstrated encouraging data regarding this measures' discriminatory abilities and convergent and predictive validity (e.g. Abel, Jordan, Hand, Holland & Phipps, 2005; Gray et al., 2013; Gray & Plaud, 2005; Letourneau, 2002; Tong, 2007;). However, Smith and Fischer (1999) found problems with its use in adolescents, showing it demonstrated poor test-retest reliability and was only able to discriminate offenders from non-offenders slightly better than chance in such a sample. There are also concerns with how the measure controls and presents its data (Cox, 2015; Fischer & Smith, 1999). Due to such issues, the AASI did not recently meet the requirements for admissibility of scientific evidence in court (Ewing, 2006). Therefore, despite the widespread use of this measure, it has several issues, bringing to doubt it's abilities.

Another currently used VT measure is the Affinity (Glasgow, Osbourne & Croxen, 2003). The Affinity appears to possess good convergent validity, internal consistency and reliability and unlike the AASI it reports untransformed raw scores and seems to fare better in adolescent samples (Cloyd, 2007; Hansen, 2011; Mokros et al., 2012; Worling, 2006). However, Mokros et al. (2012) found the overall classification accuracy of the Affinity was mediocre at 50% sensitivity for child molester status at the cost of 13% false positives. Similarly, Stephenson (2014) found using Fischer's Chi-square approach on Affinity data was not able to identify child sex offenders as having DSIs any better than chance. Finally, Fischer, Baird, Hansen, Stephenson & Veas-Wall (2012) (as cited in Cox, 2015) found cognitive strategies can enable faking on the Affinity. Therefore, despite promising findings,

the Affinity is not without issues, and consequently the need for a new VT measure of DSI is ever-increasing.

In light of such concerns, a newer VT measure has been developed – the LOOK (Veas, 2015). The LOOK discreetly measures VT as participants locate a randomly generated dot presented over an image from one of fourteen categories (seven age categories for each sex), after which they rate the sexual attractiveness of the image (Veas, 2015). The LOOK incorporates various features to increase its quality and sensitivity over current VT instruments (Cox, 2015). Firstly, it is an iPad based instrument, making it more intuitive and easier to use (Baird, 2015). Secondly, the added dot-finding task increases the cognitive load associated with the rating task, which increases sensitivity and improves discrimination in VT measures, and may interfere with one's ability to use cognitive strategies to fake the instrument (Cox, 2015; Santtilà et al., 2009; Wright & Adams, 1994;). Additionally, the LOOK has more stimulus categories, allowing for more sensitive results (Baird, 2015). Therefore, the LOOK overcomes several issues with previous VT measure and appears to be a very promising instrument.

However, the little research done on the LOOK has produced mixed results. Baird (2015) used the LOOK in a non-offending sample and found it produced similar results to previously established sexual attraction patterns, and demonstrated excellent temporal stability over a minimum period of two weeks - better than that found for the Affinity (e.g. Hansen, 2011). However, Veas (2015) found that whist the LOOK possessed some sensitivity towards falsification in non-paedophilic individuals, participants told to emulate the response patterns of the opposite gender could do so. Finally, Cox (2015) found that using Fischer's Chi-Square approach, the LOOK was unable to differentiate offenders from non-offenders. Consequently, the limited mixed research done on the LOOK warrants further investigation into its abilities.

Therefore, the aim of the current study is to assess the robustness of the LOOK in a non-offending sample. It's criterion validity will be assessed by comparing LT patterns it produces for individuals with differing sexual interests. It is hypothesised there will be a significant difference in LT between those who are sexually attracted to women and those sexually attracted to men, with the former looking at images of women longer and the latter at images of men longer. It is also hypothesised that across participants, there will be a significant difference in VT towards adult and child stimuli, with VT toward adult stimuli being significantly greater.

Design and Procedure

The experiment will be based on a 2 (sexual preference to men or women) x 2 (participant sex) x 2 (stimulus sex) x 7 (stimulus age) mixed design, with sexual preference and participant sex being the between-participant variables and stimulus sex and age being the within-participant variables.

50 male and 50 female undergraduate students will be asked to complete the LOOK after providing informed consent and demographic information. They will be compensated with course credits.

Predicted Results

A mixed ANOVA will be used to analyse the validity of the LOOK. If the hypotheses are supported it is expected there will be significant group differences between VT to adult male and female stimuli, with those sexually interested in males looking longer at the former and those sexually interested in females looking longer at the latter. It is also expected VTs across participant groups will be longer to adult stimuli than to child stimuli.

References

Abel, G.G., Huffman, J., Warberg, B., & Holland, C.L. (1998). Visual reaction time and plethysmography as measures of sexual interest in child molesters. *Sexual Abuse: A Journal of Research and Treatment, 10*, 81–95.

Abel, G. G., Jordan, A., Hand, C. G., Holland, L. A., & Phipps, A. (2001). Classification models of child molesters utilizing the Abel Assessment for sexual interest[TM]. *Child Abuse & Neglect, 25*, 703-718.

Akerman, G., & Beech, A.R. (2012). A systematic review of measures of deviant sexual interest and arousal. *Psychiatry, Psychology and Law, 19,* 118-143.

Baird, S.M. (2015). *Expected profiles and temporal stability of the LOOK.* (Unpublished doctoral dissertation), Brigham Young University, Provo, Utah.

Banse, R., Schmidt, A. F., & Clarbour, J. (2010). Indirect measures of sexual interest in child sex offenders: a multimethod approach. *Criminal Justice and Behavior, 37*, 319-335.

Bentley, H., O'Hagan, O., Raff, A., & Bhatti, I. (2016). *How safe are our children? The most comprehensive overview of child protection in the UK 2016.* London: NSPCC.

Bourke, A. B., & Gormley, M. J. (2012). Comparing a pictorial Stroop task to viewing time measures of sexual interest. *Sexual Abuse: A Journal of Research and Treatment, 24,* 479-500.

Cloyd, L.L. (2007). *Relationship between key variables in penile plethysmograph and viewing time measures of sexual arousal in sex offending adult males.* (Unpublished doctoral dissertation), University of Miami, Miami, Florida.

Cox, J.W. (2015). *Predictive validity of the LOOK.* (Unpublished doctoral dissertation), Brigham Young University, Provo, Utah.

Ewing, C.P. (2006, January). Testing tool in question. *Monitor on Psychology, 37,* 61.

Fischer, L., & Smith, G. (1999). Statistical adequacy of the Abel Assessment for Interest in Paraphilias. *Sexual Abuse: A Journal of Research and Treatment, 11*, 195-205.

Freund, K., & Blanchard, R. (1989). Phallometric diagnosis of pedophilia. *Journal of Consulting and Clinical Psychology, 57*, 100–105.

Glasgow, D.V., Osborne, A., & Croxen, J. (2003). An assessment tool for investigating paedophilic sexual interest using viewing time: An application of a single case methodology. *British Journal of Learning Disabilities, 31*, 96–102.

Gray, S. R., Abel, G. G., Jordan, A., Garby, T., Wiegel, M., & Harlow, N. (2013). Visual Reaction Time™ as a predictor of sexual offense recidivism. *Sexual Abuse: a Journal of Research and Treatment, 27*, 173-188.

Gray, S. R., & Plaud, J. J. (2005). A comparison of the Abel Assessment for Sexual Interest and penile plethysmography in an outpatient sample of sexual offenders. *Journal of Sexual Offender Civil Commitment: Science and the Law*, *1*, 1-10.

Gress, C.L.Z. (2005) Viewing time measures and sexual interest: another piece of the puzzle, *Journal of Sexual Aggression, 11*, 117-125.

Hansen, K.S.W. (2011). *Reliability and a measure of sexual interest: examining the temporal stability of scores on Affinity 2.5.* (Unpublished doctoral dissertation). Brigham Young University, Provo, Utah.

Hanson, R.K., & Morton-Bourgon, K.E. (2005). The characteristics of persistent sexual offenders: A meta-analysis of recidivism studies. *Journal of Consulting and Clinical Psychology, 73,* 1154–1163.

Israel, E., & Strassberg, D.S. (2009). Viewing time as an objective measure of sexual interest in heterosexual men and women. *Archives of Sexual Behavior, 38,* 551–558.

Kalmus, E., & Beech, A.R. (2005). Forensic assessment of sexual interest: A review. *Aggression and Violent Behaviour, 10,* 193-217.

Laws, D.R., Hanson, R.K., Osborn, C.A., & Greenbaum, P.E. (2000). Classification of child molesters by plethysmographic assessment of sexual arousal and a self-report measure of sexual preference. *Journal of Interpersonal Violence, 15,* 1297–1312.

Letourneau, E. J. (2002). A comparison of objective measures of sexual arousal and interest: Visual reaction time and penile plethysmography. *Sexual Abuse: A Journal of Research and Treatment, 14,* 207-223.

Levitan, R. D., Rector, N. A., Sheldon, T., & Goering, P. (2003). Childhood adversities associated with major depression and/or anxiety disorders in a community sample of Ontario: Issues of co-morbidity and specificity. *Depression and Anxiety 17*, 34–42.

Looman, J., Abracen, J., Maillet, G., & DiFazio, R. (1998). Phallometric nonresponding in sexual offenders. *Sexual Abuse: A Journal of Research and Treatment, 10,* 325–336.

Mokros, A., Gebhard, M., Heinz, V., Marschall, R. W., Nitschke, J., Glasgow, D. V., ... & Laws, D. R. (2012). Computerized assessment of pedophilic sexual interest through self-report and viewing time: reliability, validity, and classification accuracy of the affinity program. *Sexual Abuse: A Journal of Research and Treatment, 25,* 230-258.

Santtilà, P., Mokros, A., Viljanen, K., Koivisto, M., Sandnabba, N. K., Zappalà, A., & Osterheider, M. (2009). Assessment of sexual interest using a choice reaction time task and priming: A feasibility study. *Legal & Criminological Psychology, 14*, 65–82.

Smith, G., & Fischer, L. (1999). Assessment of juvenile sexual offenders: Reliability and validity of the Abel Assessment for Interest in Paraphilias. *Sexual Abuse: A Journal of Research and Treatment, 11*, 207-216.

Stephenson, H.L. (2014). *Screening and Diagnostic Validity of Affinity 2.5*. (Unpublished doctoral dissertation). Brigham Young University, Provo, Utah.

Stinson, J.D., & Becker, J.V. (2008). Assessing sexual deviance: A comparison of physiological, historical, and self-report measures. *Journal of Psychiatric Practice 14,* 379–388.

Snowden, R. J., Craig, R. L., & Gray, N. S. (2011). Indirect behavioral measures of cognition among sexual offenders. *Journal of Sex Research*, *48*, 192-217.

Tong, D. (2007). The penile plethysmograph, Abel assessment for sexual interest, and MSI-II: Are they speaking the same language? *The American Journal of family therapy*, *35*, 187-202.

Veas, R.A. (2015). *Falsification of the LOOK.* (Unpublished doctoral dissertation). Brigham Young University, Provo, Utah.

Widom, C. P. (1999). Posttraumatic stress disorder in abused and neglected children growing up. *American Journal of Psychiatry, 156,* 1223–1227.

Worling, J. R. (2006). Assessing sexual arousal with adolescent males who have offended sexually: Self-report and unobtrusively measured viewing time. *Sexual Abuse: A Journal of Research and Treatment*, *18*, 383-400.

Worling, J.R. (2012) The assessment and treatment of deviant sexual arousal with adolescents who have offended sexually, *Journal of Sexual Aggression, 18,* 36-63,

Wright, L. E., & Adams, H. E. (1994). Assessment of sexual preference using a choice reaction time task. *Journal of Psychopathology and Behavioral Assessment, 16*, 221–231.

Zamansky, H. S. (1956). A technique for measuring homosexual tendencies. *Journal of Personality, 24*, 436–438.

Zappalà, A. (2016). *Separating deviant and non-deviant sexual preferences with a dual-target rapid serial visual presentation task.* (Unpublished master's thesis). Åbo Akademi University, Turku, Finland.