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# Editorial

Seven Bridges is now in its eighth year of publication. Seven Bridges is an academic journal where Newcastle College University Centre students can discuss what is important to them, not only in their curriculum discipline, but also from; racism, feminism, sustainability and equality, this platform is for the students by the students. It is a space to share insights and current information that is relevant to us as well as the rest of the world.

We at Seven Bridges, have an opportunity to leave not just with a degree, but also with a footprint upon our academic space, whilst gaining valuable skills which are just as important to our studies, practices and vocations leading us into employment. Time spent as an editor, reviewer, or writer introduces knowledge external to your specialism, and provides the opportunity to work with students in other fields. This is turn, enables an external perspective beyond your own familiar academic area of study, as well as allowing a more in-depth reflection upon your own academic research. If this sounds like something you would like to be a part of, work will begin shortly on the ninth edition of Seven Bridges. Come along and get involved!

Thank you to everyone who has taken the time and effort to piece together this eighth annual edition and make it come to life.

From Sophie Gwynn (Peer Reviewer, Seven Bridges Vol. 8 and Junior Editor, Vol. 9)

Hannah Bullimore (Editor, Seven Bridges Vol. 9)

# Ultraviolet radiation: the influence on the attitudes and behaviours amongst men and women. A cross-sectional comparative study

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**ABSTRACT**
*Ultraviolet radiation (UVR) is a necessity for life on earth to thrive, especially the process of photosynthesis in biological organisms. Research demonstrates that although beneficial to vitamin D photosynthesis in humans, UVR can pose potential health risks such as cutaneous photoaging, erythema and malignancy. This research investigates into the topic of UVR, by reviewing the impacts on cutaneous physiology and distinguishing individual conduct that impacts undertaking photoprotective measures set by health organisations. Primary research investigated a sample (n=316) that determined the prevalence of the problem amongst individuals within the United Kingdom, predominantly in the North of England. Results demonstrated that participants were mostly aware of the potential health impacts UVR has, however, were spending long periods exposing themselves to the radiation whilst utilising few of the photoprotective measures advised by health organisations. Results indicated varying statistical difference between genders, with areas of negative significance within the male population.*

**KEYWORDS**: Cutaneous, Malignancy, Gender, Photoprotection, UVR.

## INTRODUCTION

The sun has been at the centre of the solar system for over four billion years, being the foundation and start of life for most biological creatures. Marine organisms evolved by utilising carbon dioxide and solar radiation, consequently creating metabolic energy and oxygen (photosynthesis). This account was essential for aquatic life to move onto land, being the catalyst to evolution (Ocean Exploration and Research, N.D).

Solar radiation, mainly ultraviolet radiation (UVR), is the predominant radiation that is emitted from the sun and is split into three categories: UVA, UVB and UVC. UVR performs a vital role in specific biological functions, such as photosynthesis in humans, animals, and plants, releasing endorphins, aiding in the vision in some animals and the navigation of some insects. It is also used in industries for its germicidal properties and medical applications (Science Learning Hub - Pokapū Akoranga Pūtaiao, 20).

In contrast, research shows that prolonged and repetitive exposure to ultraviolet radiation can have negative impacts on biological functions (Sivamani *et al.*, 2009). UVR plays a catalytic

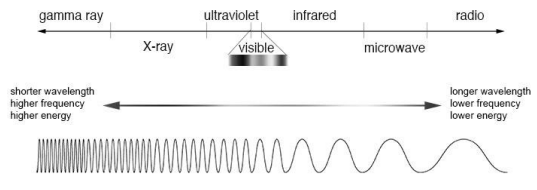
role in cutaneous damage, resulting in sunburn, photoaging (extrinsic ageing), and developing malignancies, including non-melanoma (basal cell carcinomas and squamous cell carcinomas) and malignant melanoma (Zafra, 2018).

This investigation will review the impacts on cutaneous physiology and distinguish individual conduct that impacts undertaking photoprotective measures set by health organisations. The investigation will work to the hypothesis of "to evaluate the significance of individual conduct between men and women, and if it promotes or demotes photoprotective measures advised."

## LITERATURE REVIEW

### THE PHYSICAL COMPONENTS OF ULTRAVIOLET RADIATION

UVR is a type of solar energy that is emitted from the sun, which is a constituent of the electromagnetic spectrum (EMS), sitting between visible and x-ray regions (Figure 1). Differentiating literature highlight different wavelengths for the UVR spectrum, approximately UVR sits between 10nm and 400nm (Nanometres). Shorter wavelengths have a higher energy and frequency output compared to longer wavelengths, thus meaning shorter UVR wavelengths have the most energy (D'Orazio *et al*., 2013).




Comparison of wavelength, frequency, and energy for the electromagnetic spectrum. (Credit: NASA's Imagine the Universe)

Figure 1.

The depth of which UVR penetrates the atmosphere is dependent on the respective wavelength; UVA (400-320NM), UVB (320-280NM) and UVC (280-100NM). High energy UVC is absorbed by the earth's atmosphere. The remaining abundance of UVR within the earth's atmosphere is UVA (90-95%) and UVB (5-10%) (D'Orazio *et al*., 2013), (Stanford Solar Centre, 2015). This demonstrates that longer wavelengths penetrate further into the earth's atmosphere.

The amount of UVR that reaches the surface is dependent on varying factors; geographical location and altitude position, central regions and higher altitudes have less atmospheric ozone particles to absorb UVR, resulting in further UVR emissions reaching the surface. Additionally, time of day and year, weather and reflective surfaces all contribute a role in the amount of UVR that habitants in the environment will encounter (D'Orazio *et al*., 2013; FDA, 2019).

### THE EFFECTS OF ULTRAVIOLET RADIATION ON CUTANEOUS PHYSIOLOGY

The cutaneous tissue is the first line of defense to the environment around it, with the physiological effects of UVR on epidermal and dermal tissue ranging in its benefits and risks. A common topic brought to attention is that of vitamin D synthesis (D'Orazio *et al*., 2013; Holick, 2016; Sivamani *et al*., 2009; Zafra, 2018).

UVR stimulation is necessary for vitamin D production within the epidermis, aiding in calcium production, bone and muscle health, preventing vitamin D deficiencies (FDA, 2019). Sunlight exposure is the foremost source of vitamin D amongst children and adults, as most foods lack in natural vitamin D (Holick, 2016)

However, research demonstrates vitamin D adequacy can be achieved through vitamin D fortified foods and supplements, opposed to reliance on vitamin D photosynthesis (D'Orazio *et al*., 2013).

UVR has beneficial properties, treating various cutaneous disorders. UVA and UVB are both used in dermatology to treat a range of diseases with different types of phototherapy. Common clinical indications include: eczema, lichen planus, psoriasis, rickets, vitiligo and other conditions (British Association of Dermatologists, 2018; FDA, 2019).

Research identified beneficial properties that aided specific cutaneous conditions and processes, however there are arguments against the safety and implications regarding UVR exposure. Acute and chronic overexposure can have a catalytical effect within the physiology of the skin, resulting in the influence of cutaneous malignancies and premature aging (photoaging) (Biniek et al., 2012; D'Orazio, et al., 2013; Holick, 2016; Sivamani et al., 2009; Zafra, 2018).

As previously discussed, UVR atmosphere penetration is dependent on the wavelength and their respective delivery of energy. This process directly impacts how much UVR is absorbed into the skin. Longer wavelengths (UVA) penetrate through epidermal into dermal layers, whilst shorter wavelengths have domain of the epidermal layers. This is due to epidermal macromolecules (for example, DNA, Proteins and RNA) that can effectively absorb UVB but are incapable to absorb UVA (D'Orazio *et al*., 2013; Holick, 2016).

UVA is the radiation primarily responsible for developing melanin pigment or a tan, which aims to protect from the excessive energy delivery; photodamage resulting in degradation of the epidermis and dermis (photoaging). UVB is the radiation that causes cutaneous erythema and burning of the epidermis. UVA and UVB both have carcinogenic properties, however, UVB is the chief contributor to cutaneous oncogenicity (Michalun and Dinardo, 2015).

Clinical signs of cutaneous ageing are that of rhytides, texture abnormality, loss of elasticity, vascular and pigmentary changes. Photoaging is seen as extrinsic, not intrinsic ageing (chronological decline and build-up of biotoxins). Extrinsic ageing (environmental ageing) is mix of environmental factors (for example, lifestyle and pollution), however, photoaging remains a top contributor (Michalun and Dinardo, 2015; Rittié and Fisher, 2015; Zafra, 2018). 90% of ageing is extrinsic ageing, with 10% of this accounting for High-Energy Visible (HEV-Blue light) and Infrared radiation (Grabel, 2019).

UVR irradiation causes photochemical reactions, such as reactive oxygen species (oxidative stress) and immunological stress, resulting in a cascade of changes with the epidermal and dermal layers. The effects of contentious unprotected UVR irradiation can cause damage to cell membranes and DNA, apoptosis, mutation, lipid peroxidation, excessive stimulation of melanogenesis, inflammation, and uncontrolled degradation of the extra cellular matrix (Biniek *et al*., 2012; D'Orazio *et al*., 2013; Rittié and Fisher, 2015; Zafra, 2018).

UVR presents more heinous complications, such as cutaneous malignancies. Research since the 20$^{th}$ century has shown overexposure to UVR can lead to cutaneous malignancies, with UVR being identified as a complete carcinogenic with its oncogenicity properties

that can initiate and promote tumour growth through photochemical reactions). Most common cutaneous malignancies are classified as non-melanoma (basal cell and squamous cell carcinoma) and melanoma (Biniek et al., 2012; D'Orazio, *et al*., 2013; Holick, 2016; Sivamani *et al*., 2009; Zafra, 2018).

163,000 cutaneous malignancies cases were reported between 2014-2018 in the United Kingdom. There were 147,000 non-melanoma reports (400 per day), and 16,000 melanoma reports (44 per day). In 2016 there were 67,700 (female) and 88,700 (male) non-melanoma reports, and 8,300 (female) and 8,100 (male) melanoma reports. These figures validate increase, with expectation of both cutaneous malignancies to rise; resulting in melanoma being the 5th most common cancer in the United Kingdom (Cancer Research UK, 2019; Newlands *et al*., 2016).

## ATTITUDES AND BEHAVIOURS TOWARDS ULTRAVIOLET RADIATION AMONGST MEN AND WOMEN

UVR plays an essential role in cutaneous processes, but overexposure to UVR radiation poses serious health risks to the cutaneous tissue, with both genders at the risk of cutaneous malignancies and photoaging. Statistics demonstrate women having a higher tendency (51%) than men (49%) to develop melanoma, though men have a higher mortality rate (Cancer Research UK, 2019). In contrast, statistics demonstrate men have a higher tendency than women to develop a non-melanoma (Kirk and Greenfield, 2017).

Individuals have different internal/external motivators which can impact their attitudes, behaviours and varying knowledge, which may influence safe/unsafe sun exposure and photoprotection. Individuals have larger accessibility to artificial tanning (sun beds), products and traveling, which has contributed to fluctuations in sun-related behaviours amongst the population. It is considered that popular tanning culture (for example, media), predominantly amongst young adults, may encourage unsafe sun-related behaviours to satisfy vanity needs (Kirk and Greenfield, 2017).

In one study, tanned skin was associated with looking healthier and feeling better amongst the sample; even though there was an abundance of knowledge on skin cancer prevention. Researchers concluded skin cancer prevention campaigns must address individuals' motivators to tan by promoting the utilisation of alternative tanning products (in essence, sunless tanning product), in order to address individuals' desires to tan, as opposed to enduring overexposure to the sun and UVR (Denis *et al*, 2009).

The prevalence of the issue validates that both genders must be made aware and knowledgeable of the health implications of UVR exposure and the respective protection behaviours to how they currently conduct themselves, ultimately to try tackle the individual risk and increase of cutaneous malignancies incidences. Further research is needed to be conducted on the psychosocial aspects of tanning, investigating this social attribute associated with tanning and vanity.

Individuals must protect themselves from solar radiation through a range of photoprotection measures. The main sun exposure photoprotective measures are identified with a memorable abbreviation, The Five S's; Slip on protective clothing, slap on a wide-brimmed hat, slop on SPF 30+ sunscreen, slide a pair of sunglasses on, and shade from sunlight where

possible (especially during 11am-3pm) (Skcin, 2020). Health organisations such as NICE (2016), NHS (2019) and WHO (2020) support and promote these preventative measures.

A study by Cancer Research UK (2014) investigated photoprotection trends of individuals between 2003 and 2013. Awareness of actions and behaviours were recorded and demonstrate significant trends amongst the whole sample. Between men and women, positive awareness of action trends were protecting children, avoiding sunburn, avoiding sunbeds, and skin examination. Negative trends between men and women were spending time in shade, covering up and limiting sun exposure.

Non-significant trends demonstrate increase in both genders for using SPF 15+ and seeing a doctor, and UV index usage in females. Negative trends were using sunscreen, and male usage of UV index. Between men and women positive behavioural trends were all significant, excluding spending time in the sun. The usage of sunscreen amongst both genders revealed to decrease over the period, thus showing negative significance.

Results demonstrate that the sample studied improved their awareness of actions and behaviours over the 10 years, with some negative decreases noted. Findings indicate that local authorities must keep a focal point on spreading awareness and safe practice amongst individuals. Health campaigners and local authorities must try to raise awareness, highlighting the risks, benefits and photoprotection behaviours to UVR exposure (NICE, 2016).

## METHODS

A flowchart (Figure 2) has been devised to give an overview of the methodological decisions that had been selected and applied to this investigation. This piece of research started respective planning stages in September 2019, followed by ethical approval from an ethics committee in December 2019. Data collection was carried out from December 2019 till March 2020, before final analysis of results and conclusions were made in May 2020. There was a 100% response rate with an additionality of participants (n=317 total).

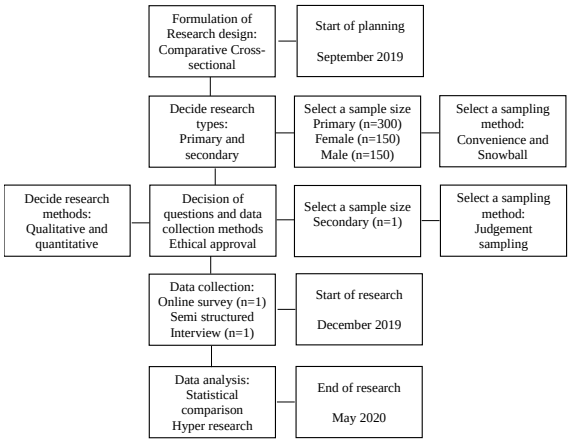



Figure 2.

The focus was on the primary sample group with the objective to compare if individual attitudes and behaviours amongst both sex groups can influence on negative and positive photoprotective measures. Additionally, a secondary sample was selected to give qualitative insight to this investigation with their occupational background. Figure 3 illustrates the questions asked to the primary sample group. Questioning consisted of polar, multichoice, range and statement questions, with two open ended discussion; this was designed to increase participation engagement.

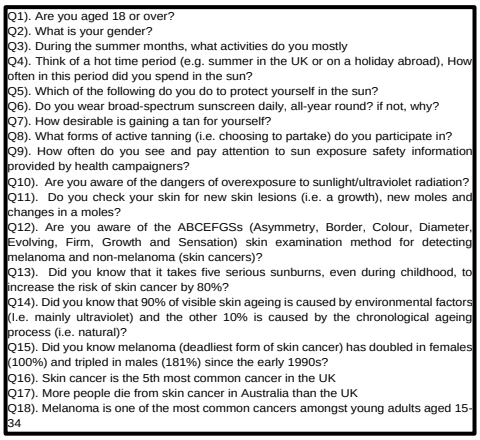

Q1). Are you aged 18 or over?
Q2). What is your gender?
Q3). During the summer months, what activities do you mostly
Q4). Think of a hot time period (e.g. summer in the UK or on a holiday abroad), How often in this period did you spend in the sun?
Q5). Which of the following do you do to protect yourself in the sun?
Q6). Do you wear broad-spectrum sunscreen daily, all-year round? if not, why?
Q7). How desirable is gaining a tan for yourself?
Q8). What forms of active tanning (i.e. choosing to partake) do you participate in?
Q9). How often do you see and pay attention to sun exposure safety information provided by health campaigners?
Q10). Are you aware of the dangers of overexposure to sunlight/ultraviolet radiation?
Q11). Do you check your skin for new skin lesions (i.e. a growth), new moles and changes in a moles?
Q12). Are you aware of the ABCEFGSs (Asymmetry, Border, Colour, Diameter, Evolving, Firm, Growth and Sensation) skin examination method for detecting melanoma and non-melanoma (skin cancers)?
Q13). Did you know that it takes five serious sunburns, even during childhood, to increase the risk of skin cancer by 80%?
Q14). Did you know that 90% of visible skin ageing is caused by environmental factors (I.e. mainly ultraviolet) and the other 10% is caused by the chronological ageing process (i.e. natural)?
Q15). Did you know melanoma (deadliest form of skin cancer) has doubled in females (100%) and tripled in males (181%) since the early 1990s?
Q16). Skin cancer is the 5th most common cancer in the UK
Q17). More people die from skin cancer in Australia than the UK
Q18). Melanoma is one of the most common cancers amongst young adults aged 15-34

Figure 3.

**RESULTS**

There has been a substantial amount of primary and secondary contribution that has be abstracted from various sources and amongst participants. Majority of participants (80.06%) enjoyed taking part in outdoor activities in the summer. The majority duration spent in the sun was 5-10 hours (average), which accounted for 80.38% of men and 75.95% of females. This data correlates with data conducted by Cancer research UK (2014) which noted that a significant negative trend was limiting sun exposure.

Common photoprotection measures undertaken were wearing sunglasses (male 67.09%, 84.18% female), wearing sunscreen with SPF (male 65.82%, 87.34% female) and to seek shade whenever possible (male 36.71%, 37.97% female). Least common photoprotection measures were wearing a wide-brimmed hat or cap (male 30.38%, 23.42% female), wearing long sleeves and pants (male 15.82%, 8.86%), avoid peak UV ray times (male 24.68%, 29.11%), other (male 3.16%, 2.53% female) and none of the above (male 6.96%, 3.16% female).

There was some statistical difference between each sex (for example, sunscreen and sunglasses usage) there was no significant difference between male and females. However, these statistics indicate that there was a significant decrease with certain photoprotective measures such as wearing a wide-brimmed hat or cap, wearing long sleeves and pants and avoid peak UV ray times, correlating with Cancer research UK (2014), which demonstrated men and women spending time in shade, covering up and limiting sun exposure were negative trends.

96.20% of men and 63.29% of females neither wore a broad-spectrum sunscreen all year-round. This supports the claim that Cancer research UK (2014) made which stated there was a negative significant decrease in sunscreen usage in both genders. Cancer research UK (2014) noted there was non-significant decrease in males' attitudes towards sunscreen, which can be reflected in the primary research conducted. "Men I have interacted with won't wear sunscreen, but I cannot speak for the population" (Kerry, 2020).

This point was made clear that men were less likely to use sunscreen because they were less likely to be skin aware and use skincare products. Although subjective this could be a potential factor. 122 participants gave reasoning for not wearing a sunscreen all-year round which were geographical environment (54.1%), attitudes and lifestyles (37.7%), genetical deposition (3.28%) and seldom reasons (4.92%). "It's cold in the UK, hardly any sun, so don't feel like it is needed" (female participant #11).

Majority of males and females gave the same answer regarding temperature and weather (geographical environment) for their indication of not using sunscreen all year-round and if the weather is not hot enough. Although rays are

less intense in the winter months and during bad weather, there is still an amount of UVR that passes through the clouds during anytime of the year. “It’s not about the temperature it’s about the UV radiation” (Kerry, 2020).

Desirability of gaining a tan fluctuates in both groups. In the male population, 6.33% found a tan extremely desirable, 8.86% found it very desirable, 44.30% found it somewhat desirable, 16.46% found it not so desirable and 24.05% found it not at all desirable. In the female population, 12.03% found a tan extremely desirable, 21.52% found it very desirable, 27.22% found it somewhat desirable, 22.78% found it not so desirable and 16.46% found it not at all desirable.

Relating to active tanning, In the male population, 57.59% do not participate in active tanning, 38.61% sunbathed, 6.96% used sunbeds, 0.36% used consumable tanning products, and 3.80% used self-tan. In the female population, 31.01% do not participate in active tanning, 45.57% sunbathed, 15.19% used sunbeds, 4.43% used consumable tanning products, and 52.53% used self-tan. These statistics demonstrate that females have a higher tendency than males to partake in active tanning.

However, females are more likely than men to partake in self-tanning products – something Denis *et al.* (2009) suggest being a healthier alternative to tanning. When asked about the awareness of dangers of overexposure, in the male population, 17.09% were extremely aware of the, 36.71% were very aware, 39.24% were somewhat aware, 3.16% were not so aware and 3.80% were not at all aware.

In the female population, 34.81% were extremely aware, 43.04% were very aware, 20.25% were somewhat aware, 1.90% were not so aware and 0% were not at all aware. Statistics demonstrate that men are less aware of the dangers than women. This can be related to how the willingness of paying attention to safety information provided by health experts.

In the male population, 6.96% stated they always pay attention to sun exposure safety information provided by health campaigners, 15.82% usually pay attention, 32.91% sometimes pay attention, 20.25% rarely pay attention and 24.05% never pay attention. In the female population, 19.62% stated they always pay attention, 20.25% usually pay attention, 31.65% sometimes pay attention, 20.89% rarely pay attention and 7.59%% never pay attention. Both sex groups equally demonstrate good practice and need for improvement.

Kerry (2020) raised a good point by highlighting that people who are vanity focused or simply do not care have the ability to switch sun-related advertisements off “it’s going to be the case of hands over ears “I don’t want to listen to this because this is going to possibly effect how I look” (Kerry, 2020). Findings demonstrate some participants do examine their skin frequently for any changes, though females did more frequently (54.43%) in comparison to males (37.21%).

This relates back to what Kerry (2020) stated about men being less skin aware. When asked about the ABCEFGSs skin examination method, 56.96% of women were not aware of the method, and 75.58% men were not, providing negative significance. Moving onto more knowledge-based statement questions. When given a fact “five serious sunburns can increase the risk of cancer by 80%”, 60.76% of

females were not aware of this and 81.01% of men were not, providing negative significance.

66.46% of men and 39.87% of females were not aware of the fact "90% of visible ageing is caused by environmental factors." This demonstrates females are somewhat more aware of this factor, which supports Kerry's claim about women being more skin aware. When asked the fact "did you know melanoma has doubled in females and tripled in males since the early 1990's", 87.34% of men and 77.22% of females were not aware of this fact, both providing negative significance.

194 expanded on this question, resulting in five classifications: Negative, revealing, seldom, unbothered/argumentative, and unsure/no comment. Some comments include "scary, shows a definitive obsession with tanning for vanity" (Male participant #1), "not surprised when I think about it due to cheap package holidays becoming more available" (Male participant #22), "shocked by the increase despite the growth of awareness" (female participant #86), "think it's a result of vanity due to media promotion if what constitutes a desirable appearance" (female participant #93).

Linking to participant female #93, Kerry (2020) mentioned that media influencers can impact on people (using an example from a television show "*Love Island*") and what they view a desirable appearance. This supports the study conducted by Kirk and Greenfield (2017). The next three questions all showed statistical improvement in both sex groups and positive significance (excluding question 17) in knowledge amongst both men and women when asked, demonstrating that knowledge of some facts is apparent in the population studied.

**CONCLUSION**

Overall, UVR is a type of solar radiation that cannot be avoided due to atmospheric penetration, subsequently leading to the impacts on the physiology of the cutaneous tissue. Although vitamin D photosynthesis is vital for life, the physiological complications of acute and chronic irradiation can outweigh the benefits. Cutaneous photoaging and malignancies are the by-product of repetitive photodamage, which incidences are expected to increase.

Positive photoprotective practices set in place by health organisations are still the foremost preventative practice against the complications such as cutaneous photoaging and malignancies. Focusing on social science has demonstrated negative and positive trends in relation to exposure and photoprotection amongst individuals, which can be reflected by their attitudes, behaviours and psychosocial motivators.

Overall, primary research demonstrated varying statistical difference amongst both males and females regarding their attitudes, behaviours and knowledge, which was as expected. Main themes indicated that majority of participants spend too long in the sun (majority average of 5+ hours), whilst underutilising all photoprotective measures and sunscreen all year-round; thus, not promoting 360 protection and placing themselves at risk of photodamage.

Desire to tan varied, with females more likely to participate in active tanning than men. Majority of participants were aware of the dangers of overexposure and tend to pay attention to health information provided, however, there was a lack of knowledge of skin examination methods and some skin cancer related facts, which both differed statistically

amongst the groups. Significant trends highlighted that some of the male population in the study were lacking certain knowledge in comparison to the female population.

It is still apparent that there is more work that must be done to raise awareness and educate the population on the importance of following these photoprotective measures and abiding by safety information available. It is evident that attitudes and behaviours are a significant factor, which both promotes and demotes photoprotective measures advised. However, it entirely dependent on individual circumstance and influence, which is deemed inevitable.

**RECOMMENDATIONS**

This research was designed to help identify the current social issue that is relating to sun exposure and photoprotective that correlate from attitudes and behaviours amongst individuals. For the medical industry usage, this mixed methods research offers an insight to a cross-sectional snapshot of what individuals believe and what they are currently doing within this period. This warrantable data is an indication for the medical industry and respective health organisations, which can be utilised for research and raising more awareness.

This investigation endeavoured in social orientated research, specifically in biological sex. It would be of interest to investigate more variables, pulling back new findings. Variables that are ought to be included are age, sex, ethnicity, economical classification, and demographic. This notion has been put forward as progression of this investigation created additional hypothesises. The purpose of this research was not meant to investigate any variable other than biological sex, however, further research in these different variables would be of academic interest.

As previously identified, raising awareness is something that has been concluded from the findings of this research. Although there is information out there, with support of health organisations and local charities such as MelanomaMe; there is more work that should be done to ensure the population are adhering to the information provided. Raising awareness through mass media campaigns may provide the population with accurate information regarding UVR safety, but this must demonstrate the full extent of the issue and rather a statistic.

This will be achieved by identifying the need of vitamin D and deficiency avoidance, the damage overexposure causes, followed by the steps of diagnosis, stage development and treatment of cutaneous malignancy, emotional damage inflicted on individuals and supportive networks, with focus on preventative photoprotection measures. This 360 approach captures the full extent of the issue, rather than seeing a statistic it provides more of a story, which is hoped to encourage individuals to make appropriate changes to their attitudes and behaviours.

Professionals are ought to take a more of a psychological approach when dealing with the population. It is apparent that the population enjoy spending time outside in sun and the desire to tan is still a societal value, as portrayed by media and individual beliefs. It would be interesting to see more research conducted on the psychological phenomenon to fully understand how these impacts on individuals, and how professionals can utilise this to increase responsible sun exposure and photoprotection behaviours.

**REFERENCES**

Biniek, K., Levi, K., and Dauskardt, H.R. (2012). Solar UV radiation reduces the barrier function of human skin. *Proceedings of the National Academy of Sciences.* 109 (42), pp. 17111-17116. [Online] Available at: https://www.pnas.org/content/109/42/17111 [Accessed 22 January 2020].

British Association of Dermatologists. (2018). *Phototherapy*. British Association of Dermatologists. [Online] Available at:http://www.bad.org.uk/for-the-public/patient-information-leaflets/phototherapy/?showmore=1&returnlink=http%3A%2F%2Fwww.bad.org.uk%2Ffor-the-public%2Fpatient-information-leaflets#.XheHvnd2tYd [Accessed 09 January 2020].

Cancer Research UK. (2014). Trends in awareness and behaviour relating to UV and sun protection: 2003-2013. Cancer Research UK. [Online] Available at: https://www.cancerresearchuk.org/sites/default/files/sun_protection_trends_-_cruk.pdf [Accessed 30 January 2020].

Cancer Research UK. (2019). Melanoma skin cancer statistics. Cancer Research UK. [Online] Available at: https://www.cancerresearchuk.org/health-professional/cancer-statistics/statistics-by-cancer-type/melanoma-skin-cancer#heading-Zero [Accessed 25 October 2019].

Cancer Research UK. (2019). Non-melanoma skin cancer statistics. Cancer Research UK. [Online] Available from: https://www.cancerresearchuk.org/health-professional/cancer-statistics/statistics-by-cancer-type/non-melanoma-skin-cancer#heading-Zero [Accessed 25 October 2019].

Dennis, L.K., Lowe, J.B., and Snetselaar, L.G. (2009). Tanning behaviour among young frequent tanners is related to attitudes and not lack of knowledge about the dangers. *Health Education Journal.* 68 (3), pp. 232-243. [Online] Available at: https://journals.sagepub.com/doi/abs/10.1177/0017896909345195 [Accessed 30 January 2020].

D'Orazio, J., Jarrett, S., Amaro-Ortiz, A. and Scott, T. (2013). UV Radiation and the Skin. *International Journal of Molecular Sciences*, 14(6), pp.12222-12248. [Online] Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3709783/ [Accessed 27 December 2019].

FDA. (2019). Ultraviolet (UV) Radiation. FDA. [Online] Available at: https://www.fda.gov/radiation-emitting-products/tanning/ultraviolet-uv-radiation [Accessed 09 January 2020].

Grabel, A. (2019). Photoaging: What You Need to Know About the Other Kind of Aging. The Skin Cancer Foundation. [Online] Available at: https://www.skincancer.org/blog/photoaging-what-you-need-to-know/ [Accessed 22 January 2020].

Holick, F.M. (2016). Biological Effects of Sunlight, Ultraviolet Radiation, Visible Light, Infrared Radiation and Vitamin D for Health. *Anticancer Research*. 36 (3), pp. 1345-1356. [Online] Available at: http://ar.iiarjournals.org/content/36/3/1345.full [Accessed 09 January 2020].

Kirk, L. and Greenfield, S. (2017). Knowledge and attitudes of UK university students in relation to ultraviolet radiation (UVR) exposure and their sun-related behaviours: a qualitative study. *BMJ Open*. 7 (3), pp. [Online] Available at: https://bmjopen.bmj.com/content/7/3/e014388.info [Accessed 22 January 2020].

Michalun, M. and Dinardo, J. (2015). *Skin Care and Cosmetic Ingredients Dictionary.* Fourth edition. New York, Cengage Learning. Pp. 32-34, 88-89.

NASA. The Electromagnetic Spectrum - (Figure 1). (2014). National Aeronautics and Space Administration. [Online Image] Available at: https://imagine.gsfc.nasa.gov/science/toolbox/emspectrum1.html [Accessed 27 December 2019].

Newlands, C., Currie, R., Memon, A., Whitaker, S. and Woolford, T. (2016). Non-melanoma skin cancer: United Kingdom National Multidisciplinary Guidelines. *The Journal of laryngology and otology.*130 (S2), pp. 125–132. [Online] Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4873942/ [Accessed 22 January 2020].

NICE. (2016). Sunlight exposure: risks and benefits. National Institute for Health and Care Excellence. [Online] Available at: https://www.nice.org.uk/guidance/ng34/chapter/1-Recommendations Accessed 22 January 2020].

NHS. (2019). Sunscreen and sun safety. National Health Service. [Online] Available at: https://www.nhs.uk/live-well/healthy-body/sunscreen-and-sun-safety/ [Accessed 22 January 2020].

Ocean Exploration and Research. (n.d.). How has the ocean made life on land possible? National Oceanic and Atmospheric Administration. [Online] Available at: https://oceanexplorer.noaa.gov/facts/oceanproduction.html [Accessed 09 January 2020].

Rittié, L., and Fisher, J.G. (2015). Natural and Sun-Induced Aging of Human Skin. *Cold Spring Harbor Perspectives in Medicine.* 5 (1), pp. 53-70. [Online] Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4292080/?report=classic [Accessed 22 January 2020].

Science Learning Hub - Pokapū Akoranga Pūtaiao. (2014). Uses for UV. [Science Learning Hub - Pokapū Akoranga Pūtaiao. [Online] Available at: https://www.sciencelearn.org.nz/resources/1305-uses-for-uv [Accessed 09 January 2020].

Stanford Solar Center. (2015). UV Light. Stanford Solar Center. [Online] Available at: http://solar-center.stanford.edu/about/uvlight.html [Accessed 27 December 2019].

Sivamani, K.R., Crane, A.L. and Dellavalle, P.R. (2009). The benefits and risks of ultraviolet (UV) tanning and its alternatives: the role of prudent sun exposure. *Dermatologic Clinics.* 27 (2), pp149-156. [Online] Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2692214/?report=classic [Accessed 09 January 2020].

Skcin. (2019). The Five S's of Sun Safety. The Karen Clifford Skin Cancer

Charity. [Online] Available at: https://imagine.gsfc.nasa.gov/science/toolbox/emspectrum1.html [Accessed 27 December 2019].

World Health Organization. (2020). Sun Protection. World Health Organization. [Online] Available at: https://www.who.int/uv/sun_protection/en/ [Accessed 22 January 2020].

Zafra, J. (2018). The Impact of Sun on Skin. *Aesthetics Journal*, (7) pp. 43-46. [Online] Available at: https://aestheticjournal.com/feature/the-Impact-of-the-sun-on-skin?authed [Accessed 09 January 2020].

# Efficiency comparison between horizontal and vertical axis wind turbines when used in an urban setting

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**ABSTRACT**
*This research aims to compare two orientations of turbines (Horizontal-Axis and Vertical-Axis) when used in an urban setting. Using experimentation to determine which outputs the highest efficiency when exposed to the effect of low wind speeds and comparing results with archival study. The research aims to convey knowledge on both orientations and give insight on urban wind conditions as well as identify limitations in both urban turbine placement and each model. Finally, conclusions will be made on why Vertical Axis Wind Turbines can be considered superior within urban environments.*

**KEYWORDS**: Efficiency, Renewable energy, Urban energy, Wind turbines.

## INTRODUCTION

The increased demand for clean energy production alongside technological advancements in the field has brought wind energy to the forefront of the renewable energy stage. Wind turbines have always been a feasible means of renewable energy production, both onshore and offshore. Standard Horizontal Axis Wind Turbine (HAWT) wind designs often suffer in urban locations for several reasons (Winslow, 2017). These are size, noise, aesthetics and possibly the most important, efficiency.

This is because of the turbulent wind flow created by the complex environment in an urban area, wind turbines suffer as they do not receive optimal wind conditions, resulting in dramatic reductions in efficiency (Murthy, 2017). There are two designs of wind turbine found in urban locations, these are Horizontal Axis and Vertical Axis wind turbines (VAWT). Urban HAWTs are found commonly in industrial and domestic energy production, typically in factories and small businesses.

HAWTs drive trains are mounted horizontally and typically have a higher output ranging anywhere between 2-12 megawatts (MW) (Faizan, UND). Urban HAWTs tend to have a lower output than offshore HAWTs (generally below 2MW). VAWTs are commonly found in domestic and urban usage onshore and naturally have a lower output, the highest recorded being 3.8MW (Möllerström, 2019). They differ from HAWTs as they have a vertically aligned drive train.

This research aims to compare two forms of wind turbine orientation in a simulated urban setting and conclude using primary data which orientation yields the highest efficiency. This research also aims to explore the effect of differing wind conditions, identify limitations

in placement and discuss formula for wind energy equations. The objectives of this research are to produce primary data through a lab-based experiment which will provide information on each model's efficiency and power output as well as compare archival study to establish key differences in urban and non-urban turbine placement.

## METHODOLOGY

The approach to this research was to utilise a mixed method. This combined primary and secondary data, in the form of an experiment and archival study. The mixed method approach is advantageous for several reasons (Shorten & Smith, 2017). Firstly, a mixed method is able to identify contradictions and links between archival study and quantitative data (Shorten & Smith, 2017).

A mixed method offers improved flexibility in the research providing information that would otherwise be unavailable if only one method was selected (Wisdom & Creswell, 2013). An experiment was selected as the method of primary data collection which provides quantitative data. An experiment was selected as it is allows the identification of changes in variables (Saunders, *et al*., 2016).

Similarly, experimentation allows the tight control of variables (Street, 1995) which is important in this research. The experiment has limitations, in that an artificial setting was created. The lab setting can result in inaccurate data being produced, because it can be unrepresentative of real-world interactions (Crowther & Lancaster, 2009). Therefore, data can be unreliable and not applicable to other research. Moreover, the experiment lacked model validation meaning that findings from a singular experiment would lack legitimacy although, repeated tests resulted in uniform results.

In order to analyse the numerical data produced from the experiments it was displayed in tables (Figures 4 & 5) and converted into graphs showing wind speed in comparison to both efficiency and power output. This was selected as a preferred method as quantitative data conveys little meaning in its natural form (Saunders, *et al*., 2016), therefore was displayed in a user-friendly way and graphical representation is considered the best method of doing so (Paltridge & Phakiti, 2010).

## DATA ACQUISITION & EXPERIMENT

In this experiment, a large fan with interchangeable speeds was placed at a distance of 0.35M from both a HAWT and VAWT model. Obstructions were placed between the wind source and models to simulate the turbulent wind flow present in an urban environment. The fan was turned on and the wind speed was measured with an anemometer at four differing wind speeds in metres per second (m/s) and miles per hour (mph), (2m/s-4.47mph, 2.4m/s-5.36mph, 2.9m/s-6.49mph and 3.1m/s-6.93mph).

Using wind power equations, the potential power was derived for both turbines at each wind speed (Makky, 2012) giving a potential power in watts. The turbines were then exposed to each wind speed in ascending order and using a Multimeter, an output in watts was recorded for both at each speed. Finally, using an efficiency formula (Royal Academy of Engineering, UND),

$$\frac{Available\ Power}{Power\ Output} \text{ x } 100$$

it was possible to determine the efficiency for each model at each wind speed.

## LITERATURE REVIEW

Wind resource assessment (WRA) is the analysis of the available wind and quality in an area (AWS Scientific, 1997). WRA takes into account several factors, these are average wind speed, air density, weather and the topography of the land. WRA is difficult in urban locations as the terrain is complex, and wind patterns are affected by obstructions (AWS Scientific, 1997).

Typically, there are seven wind power classes based on annual mean wind speed (m/s). An urban area experiences 5.6m/s on average, therefore, focus of this research is on wind power classes 1-3 as offshore sites require a wind power class of 6 and above (Figure 1 displays wind power classes 1-3).

| Wind power class | Annual mean WS (m/s) | Wind energy resource partition |
|---|---|---|
| 1 | 0.0–4.4 | Poor |
| 2 | 4.4–5.1 | Moderate |
| 3 | 5.1–5.6 | Good |

Figure 1. Wind Power Classes (Murthy, 2017)

Topography is an important feature when wind turbine placement is being considered, as complex terrain affects wind resource and causes significant changes in turbine performance (Han X, 2017). Complex terrain is undesirable as it creates turbulence (AWS Scientific, 1997). (Figure 2 shows turbulence caused by buildings).

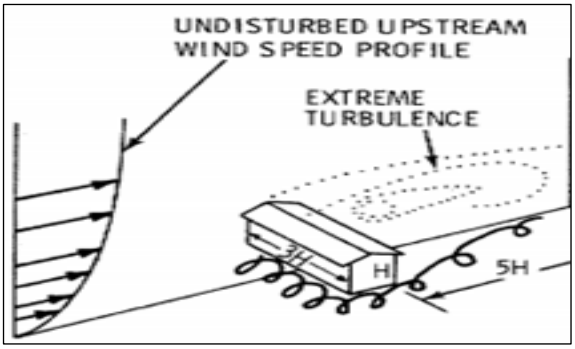


Figure 2. Urban Turbulence (AWS Scientific, 1997)

Due to effects on wind resource it has been suggested that urban locations do not lend themselves to traditional turbines or placement (Dance, 2018). It has been claimed that the maximum efficiency achievable by a wind turbine is a set coefficient of 59.26% (Betz, 1926). This is known as Betz limit or Betz power coefficient (***Cp)***.

This figure is still used in modern day equations and used as a benchmark coefficient (Regheb, 2011). This figure is derived from a perfect theoretical model, hence why it cannot be exceeded. The figure is defined by $\left(\frac{16}{27}\right) = 0.593$ *or* 59.3%. Other formula are important when determining efficiency, a key formula is the available power formula.

$$\frac{1}{2} pAV^3 x\ Cp$$

Where ***Cp*** is Betz limit, ***p*** is air density, ***V*** *is* wind speed velocity and ***A*** is the swept area of the blades (Makky, 2012). This formula provides the available power that a turbine can draw from the wind. To determine the efficiency of a turbine, the available power is used alongside the output in the equation,

$$\frac{Available\ Power}{Power\ Output} \text{ x } 100$$

In real life applications turbines are unable to operate at Betz limit due to mechanical factors and imperfect conditions. Most modern turbines work between efficiencies in the region of 10-40% with the best designed achieving between 35-45% (Royal Academy of Engineering, UND).

In urban locations, most turbines operate below 10% efficient, this is due to the huge impact of urban obstructions producing a complex wind flow, and as a result drastically effecting efficiency. Figure 3 displays average efficiency for different types of turbine.

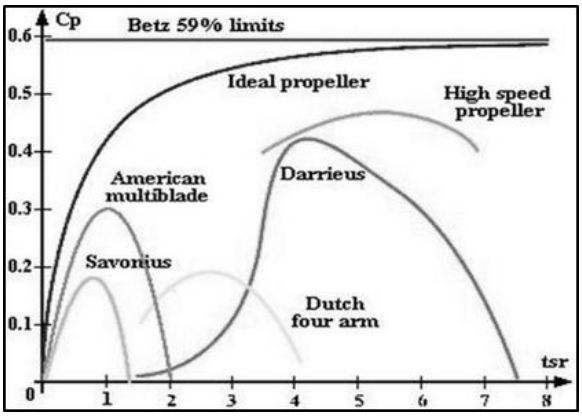


Figure 3. Wind Turbine Efficiencies (Urjat, 2008)

VAWTs are found less commonly than HAWTs as they tend to have a lower power output and efficiency but arguably perform better in urban locations (Winslow, 2017). The VAWT used in this research was that of a three-blade Savonius design, this was selected as three blades arguably offer the highest performance in Savonius designs (Wenehenubun, 2014).

Savonius turbines excel in urban locations as they have an omnidirectional design which allows the turbine to harness wind from every direction. Not only this but VAWTs require lower wind speeds to cut in (Winslow, 2017) which is beneficial in urban areas where turbulent wind flow is present. HAWTs are commonly found in large scale industrial applications but are sometimes found in urban environments. These tend to be smaller models, which this research will focus on. HAWTs generally have a higher cut in speed than VAWTs, excelling in areas with lower turbulence.

**DISCUSSION**

After the research was conducted and the efficiencies determined for each turbine, the results were put into the graph shown in Figure 4.

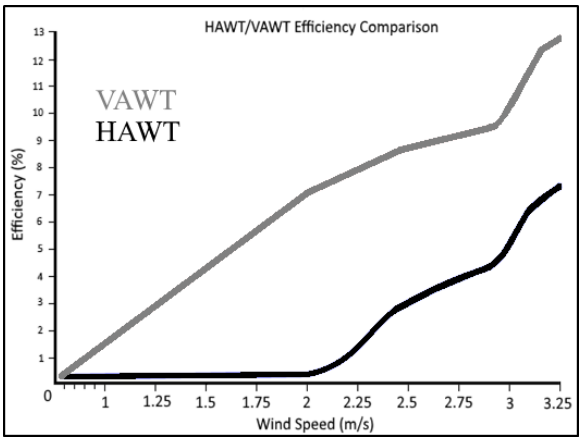


Figure 4. HAWT/VAWT Efficiencies

At the current stage in research, it is apparent that the HAWT yielded a much lower efficiency than the VAWT throughout each wind speed. It is also evident to see that the VAWT cut in at a lower wind speed than the HAWT. This agrees with several studies which claim that HAWTs suffer in urban locations as they have a lower cut in speed than VAWTs (Winslow, 2017; Murthy, 2017; Faizan, UND).

It is visible to see that the HAWT has a cut in speed in the region of 2.0-2.4m/s, although this agrees with some studies it contradicts others which claim that HAWTs have a cut in speed of 4m/s (Rehman, 2018). This is possibly the result of the model turbine being made from a

lighter and smaller material, which allows the model to cut in earlier as it takes less wind power to move the blades. Toward the end of the graph after the turbines reach 3m/s, both turbines spike dramatically.

The HAWT is well within its efficiency threshold which studies claim to achieve, but the VAWT is on an increment to excel its expected efficiency. Savonius turbines are claimed to attain efficiencies of 18% at the most (Urjat, 2008). The VAWT is 12.7% efficient at 3m/s and continuing to increase, this implies that it will exceed its rated efficiency. It is possible that the increment will slow down and the VAWT will remain within its limits. If not, the increment is likely a result of human error in the lab.

The non-incremental increase between 2.25m/s and 3.25m/s is likely a result of the fewer amount of data samples taken and would straighten out if more samples were taken. Figures 5 and 6 show efficiency versus wind speed for the HAWT and VAWT.

| | | | |
|---|---|---|---|
| HAWT Efficiencies | | 2.0m/s | N/A (No Cut In) |
| | | 2.4m/s | 3.81% |
| | | 2.9m/s | 4.21% |
| | | 3.1m/s | 6.32% |

Figure 5. HAWT Efficiencies

| | | |
|---|---|---|
| VAWT Efficiencies | 2.0m/s | 7.08% |
| | 2.4m/s | 8.60% |
| | 2.9m/s | 9.34% |
| | 3.1m/s | 12.24% |

Figure 6. VAWT Efficiencies

It is also evident that the obstructions in the experiment have an adverse effect on the wind resource, as theorised by (Royal Academy of Engineering, UND). As data curves have anomalies and outlying figures which are likely the result of unpredictable and complex wind, giving differing wind supply depending on obstruction placement.

## CONCLUSIONS & LIMITATIONS

It is evident from both tables and the graph that the VAWT outperformed the HAWT throughout every wind speed recorded. As a result, preliminary conclusions indicate that the VAWT is more suitable than its horizontal counterpart for urban placement. This is a result of the higher efficiency yielded and the lower cut in speed. This is likely a result of the lower wind speed category and complex wind resource caused by obstructions.

Although, this research does suffer from limitations as a result of the potentially unrepresentative models used, as well as the artificial environment created. Due to the restrictions in equipment wind speed data could only be recorded up to 3.1m/s and therefore only applies to wind power class 1 and does not include data for power classes 2 and 3, therefore does not fully represent urban wind conditions.

This data can be used as a benchmark, but to determine more accurate results improvements could be made. More data points taken at more frequent wind speeds to give a cleaner graphical representation. Wind speeds up to 5.6m/s could have been used to give a better idea of performance in an average urban setting.

## REFERENCES

AWS Scientific. (1997). *Wind Resource Assessment Handbook,* Golden: Renewable Energy Laboratory.

Betz, A. (1926). *Wind Energy and its Extraction through Windmills.* 2nd ed. Göttingen: Vandenhoeck.

Crowther, D. & Lancaster, G. (2009). Structuring Experimental Research Design. In: *Research Methods.* Oxford: Elsevier, pp. 128-137.

Dance, S. (2018). *Urban Wind Turbines: A Feasibility Study*, London: CIBSE.

Faizan, A. (n.d.). Horizontal-Axis Wind Turbine (HAWT) *Working Principle | Single Blade, Two Blade, Three-Blade Wind Turbine.* [Online] Available at: Horizontal-Axis Wind Turbine (HAWT) Working Principle | Single Blade, Two Blade, Three-Blade Wind Turbine | Electrical Academia. [Accessed 09 June 2020].

Han, X. (2017). Atmospheric stability and topography effects on wind turbines. In: *Renewable Energy.* Hohai: Elsevier, pp 640-651.

Magdi Regheb, A. M. (2011). Wind Turbine Theory – The Betz Equation and Optimal Rotor Tip Speed Ratio. In: R. Carriveau, ed *Fundamental and Advanced Topics in Wind Power.* Rijeka: IntechOpen, pp. 19-28.

Makky, A. A. (2012). *Wind Turbine Power Coefficient.* [Online]. Available at: Rotating Wind Turbine - Computational Fluid Dynamics is the Future (cfd2012.com). [Accessed 09 June 2020].

Murthy, K. (2017). A comprehensive review of wind resource assesment. In: *Renewable and Sustainable Energy Reviews* . Hamipur: Elsevier, pp. 1320-1342.

Möllerström., E., (2019). *Whatever became of the vertical axis turbine?*. [Online] Available at: Whatever became of the vertical axis wind turbine? - Modern Power Systems. [Accessed 10 June 2020].

Paltridge, B. & Phakiti, A. (2010). Quantitate Data. In: *Research Methods in Applied Linguistics.* London: Continuum, pp. 40-42.

Rehman, S. (2018). *Horizontal Axis Wind Turbine Blade Design Methodologies for Efficieiency Enhancement – A Review*, Dhahran: Energies.

Royal Academy of Engineering. (n.d.). *Wind Turbine Power Calculations, s.I.:* Raeng.

Saunders, M., Lewis, P. & Thornhill, A.( 2016). Formulating the Research Design. In: *Research Methods for Buisness Students.* Essex: Pearson, pp 178-18.

Shorten, A. & Smith, J. (2017). *Mixed methods research: expanding the evidence base*, Birmingham: BMJ.

Street, D. L. (1995). *Controlling extraneous variables in experimental research: a research note*, s.l: Taylor Francis.

Wenehenubun, F. (2014). *An experimental study on the performance of Savonius wind*, Atma Jaya: Elsevier.

Winslow, A. R. (2017). *Urban Wind Generation: Comparing Horizontal*, Worcester: IDCE.

Wisdom, J. & Creswell, K. W. (2013). *Mixed Methids: Integrating Quantitative and Qualitative Data Collection and Analysis While Studying Patiented-Centred Metical Home Models*, Rockville: AHRQ.

# The relationship between male adolescents and body image, and how their holistic development is affected

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**ABSTRACT**
*Research reflects upon the aspect that children are continually developing throughout their childhood and adolescence. Studies throughout history show that children were not always valued in terms of their emotional wellbeing and needs. Therefore, in order to safeguard children and young people, legislation has been introduced to help protect the child's needs; no matter what their race, ethnicity or gender. The primary focus of body image has always been female orientated with the assumption that only girls are affected by said issues. Literature explores the obstacles that male adolescents encounter from the transition from childhood to manhood, regarding biological, sociological and cultural impacts.*

**KEYWORDS:** Body image, Adolescent males, Development, Masculinity

## INTRODUCTION

The central theme of this essay is the importance of body image reflecting upon child development and specifically adolescent males. As presented by Ricciardelli & Yager (2016) body image is a term that refers to one's perceptions, thoughts and feelings about their own body, that consists of different elements including how they feel about themselves. This includes their behaviour and actions when dissatisfied with their body and appearance. The importance of biological, sociological and cultural impacts on a child's development and relevant theorists to support will be discussed. It will discuss the impact of body image upon the adolescent reflecting their physical, emotional and social development, and the factors that support crucial milestones throughout adolescence. It will look into the changing perceptions of childhood as a whole, and particularly the change in attitudes towards men and the masculine identity.

Historically, children were not viewed in a way in which they are today. Aries, (1962) explored that children from the age of seven years-old were seen as little adults who were required to go out and work and contribute to society just as an adult would. He argued that children were seen as an economic asset rather than part of a family so no emotional attachment was apparent. However, in the 17$^{th}$ century attitudes towards children were beginning to change, as Ezell (1984) explores that Locke's view upon childhood examined that children are like blank slates who needed nurtured in order to produce a response. He acknowledged that children were individuals that could develop their own identity and personality. From this, attitudes

today have dramatically changed towards children, in terms of their protection and wellbeing in the fore front of everyone's mind. With regards to this, The United Nations Conventions on the Rights of the Child (UNCRC) (Unicef, 2020) respects children all under the age of eighteen particularly under Article 6, in which children have the right to life, survival and development reflecting that all should be done in order for children to develop to their full potential. This takes into consideration all the areas of development of the child. Furthermore, it is the responsibility of the parent or guardian to care for the child, to protect their well-being under the Children Act (GOV, 1989). With this legislation considered, it is important to consider when discussing any issue revolving around a child. Today, we reflect upon the aspect that children are continuously developing and will overcome various obstacles throughout childhood and adolescence, which are seen as seen as sensitive periods (Del Giudice, 2014).

**LITERATURE REVIEW**

Doyle (2013) explores the idea that it is often assumed that only girls are affected by body image issues, which is not necessarily the case. A study was conducted of 150,000 children in which 22% of boys stated their body image was their biggest worry. Morin (2019) explores that some children as young as eight years old become more aware of body image and their confidence towards it. According to Del Giudice (2014) between the ages of six and eight, the awakening of adrenal glands commences and has powerful effects on brain functioning. This affects the way children start to think differently and start to become more independent within themselves. Adrenal androgens can be converted into sex hormones oestrogen and testosterone, that arguably marks the beginning of puberty for children, hence why they may only start becoming aware of their own bodies and how they physically look. This is a result of the major shift in development in the brain as puberty commences in terms of cognition.

Young boys becoming more aware of body image could also be due to the contemporary idea that boys and men are expected to appear masculine and strong and they are starting to understand the meaning of this. Connell (1983) correlates this theme, as discussed, is that men were previously judged on masculinity by their ability to physically do things, whereas now it is a need to be seen as masculine. This explores that the expectations of the ideal physical body are changing, in which shape, size and levels of fatness are prioritised (Drummond 2002). Wagner (2008) expands on this idea, exploring that males also struggle with negative body image because society portrays the ideal body for men to be the V-shape, toned hips and large muscular shoulders. This evidently shows a relationship with body image and social influences.

Body image can be portrayed through endless sources such as magazines and toys as Gauntlett (2008) explores Men's Health magazines gives men a self-conscious style of appearance and can make them more body conscious (p.188). However, the advance in technology reflects social media playing a significant role within adolescence today. As Fitton *et al.* (2013) introduces, technology and online interaction enhance developmental issues in adolescent lives and boys spend more time online. It is further argued that technology can have a positive impact on cognitive development and can reduce social barriers. However, on the other hand technology as a whole can have a profound impact on a young person's emotional wellbeing as Hayes (2019) explores the idea that once children enter

secondary school at eleven years-old, they desire validation through social media regarding 'likes'. This can trigger to them becoming anxious about how they are portrayed online. Additionally, this is due the fact that social media is more accessible for younger children, as under-age use is now seen as 'common place' (Henshaw, 2018).

Social media is also an influence for both men and women to reinforce stereotypes by what they see (Defries 2014). In relation to this, Del Giudice (2014) further explores that through middle childhood, social competition can be considered crucial in terms of status and reputation among peers, and fitting in to the expectations of people. This links to Erikson's theory particularly the stages between ages six and twelve, Industry vs Inferiority, in terms of peers becoming of more significance and gaining more self-esteem from this source, therefore reflecting on things they previously may not have (Bates, 2019) through the desire to gain acceptance. Steinberg (2001) explores that peer influence upon adolescents can be positive, in which they admire and respect their opinions more than a parent for example and surround themselves with friends that have similar views and attitudes. However, it can also be negative by potentially being encouraged into delinquency. Adolescents are most affected and influenced by peers throughout middle adolescence and can often engage in a false self-behaviour, acting differently when around classmates (Steinberg, 2001). This is because individuals devalue their own self-worth, and crave acceptance from their peers in order to fit in to the expected society.

With regards to this idea of acceptance, this is when cliques can be formed. Cliques are a close-knit group of friends, in which their main focus is maintaining popularity and status, in which some members of a clique can use their power against others (Hoffses, 2018). As a result of group members exploiting their power, this can lead to bullying as Salmivalli (2010) states that bullying and victimisation should be seen as group phenomenon and members of a group conduct themselves in unison towards one being bullied. This can lead to an individual having long lasting physical and psychological influences on the adolescent (Lodder *et al.*, 2015). The effects of being bullied can lead to a higher risk of developing depression or anxiety and having lower self-esteem. It can also lead them to have unstable or unhealthy relationships in their future life (KidScape, 2020) Linking with the idea of peer approval, Elkind's theory of imaginary audience links closely and the idea of adolescent egocentrism in which adults cannot distinguish between what people are actually thinking and what they perceive to be their thoughts (Elkind, 1967). As Ryan & Kuczwoski (1994) explore, imaginary audience can affect your self-conscious and self-esteem, stating that public self-consciousness correlates with concern of appearance, thus affecting their personal, social and emotional development if interpreted a view incorrectly about themselves.

It is argued that females would suffer more from an imaginary audience than males in terms of the pressures connected with appearance, however as OpenLearn (2017) argues, young boys and men are well aware that they need to look good, and feel the pressures of conforming to society to portray certain types of masculinity, which demonstrates the young boys are emotionally connected to expectations of them.

**EXPECTATIONS OF MASCULINITY**

Ricciardelli & Yager (2016) demonstrate that puberty is often seen as a positive experience for boys that urges them closer to the ideal

shape of a man. However, as Carrillo (2018) discusses, there can be an intense amount of pressure to be muscular to resemble the masculine identity, and societal expectations, therefore potentially leading to body dissatisfaction. NHS (2019) explore that the average age for males to fully begin puberty is twelve years-old involving growth of hair in armpits, chest and pubic area, deepened voice and sweating more. It is important to acknowledge that not everyone develops puberty at the same time, some slower, some quicker, in which Klump (2013) demonstrates a relationship between pubertal timing and body dissatisfaction.

The desire to be muscular and conform to society can have various effects on the emotional and physical development of an adolescent male if they are not developing at the same time as their peers, they can feel self-conscious about their appearance (Raising Children Network, 2017). In addition to this Drummond (2002) explores that boys who are self- conscious about their appearance can turn to active sports, and being focussed on this, they may suffer from eating disorders. Ekern (2014) also explains that it is often men who participate in sports that require size and strength who can develop an eating disorder called Muscle Dysmorphia (MDM), a strand of Body Dysmorphic Disorder (BDD). This is when one thinks of themselves as too small, or not adequately muscular. Pope *et al.* (2005) explores that some males who progress onto suffering from MDM, often neglect important social activities or stick to an intense diet and time-consuming workout regime. This can have a major effect on their physical development as a growing adolescent and their social interactions because they are not looking after their growing and developing bodies. It is essential that children and adolescents take care of their bodies as it is vital for growth as the body requires nutrition to promote brain functioning. Pope *et al.* (2005) further explain that men experiencing MDM were more likely to report a suicide attempt thus affecting their emotional wellbeing. This could be because eating disorders are typically seen as a feminine issue with 'girls expressing significantly more dissatisfaction with their bodies than boys' (Cowie, 2012, p.136) therefore affecting their masculinity as portrayed by society, and leading to boys and men to not discuss their problems.

## IMPACT ON MENTAL HEALTH AND WELLBEING

Ekern (2014) further explores that MDM can potentially lead to the misuse of anabolic steroids to increase the body size, with 'seven% of high school boys using these types of products'. Anabolic steroids are hormone steroids which increase the testosterone levels in boys and stimulate growth in bones and muscles (Anderson, 2018). This clearly demonstrates that body image and requiring satisfaction can develop within adolescence. This is due to the rise in hormone levels and craving acceptance from peers which can have a detrimental effect on one's mental health.

Inappropriate use of anabolic steroids can lead to physical and emotional development effects causing aggressive behaviour and mood swings. It has been explored that the physical health effects in males from taking anabolic steroids can lead to baldness, shrunken testicles and lower sperm count (Goldberg, 2018; Connolly, 2000) thus evidently contradicting the outcome of enhanced masculinity they are trying to achieve. As Telegraph Media Group (2015) discuss, steroids are far from harmless and once men start using anabolic steroids they can easily spiral into addiction. In addition, this can be caused by having low self-regulation in which they turn to different coping mechanisms

to manage their struggles and to reward their brain. Abolghasemi and Rajabi (2013) support this by stating that low self-regulation can predict substance abuse disorders. World Science Festival (2014) explores the relationship between the adolescent brain and addiction, in which it showed that adolescents who experimented with drugs before they turned eighteen years-old had a 25% greater chance of becoming addicted than those who did not. This particular study looked into the relationship between nicotine and cocaine, in which the DNA is loosened by trying less dangerous drugs such as nicotine. Then when exposed to cocaine adolescents become addicted quicker. This demonstrates that adolescent brains are more prone to addiction, and when exposed to new drugs the brain essentially soaks up the new experiences, therefore being more vulnerable to addiction.

In addition to the theme of addiction, Connolly (2000) further explores the fact that steroids are seen as the 'forbidden fruit' and it is the secrecy and illegality that attract men to experimenting with them. This links to Blakemore and Choudury's theory (2006) in which the grey matter in the pre-frontal cortex in adolescent brains develops later in boys and affects their decision making. This also drives them to take more risks when with their friends, by gaining independence from their parents, leading them to potentially experiment with drugs and steroids.

Becoming addicted to steroids, can have a significant impact on the intellectual and cognitive development of the adolescent brain during this sensitive period of development. Furthermore, this links to Kohlberg's stages of moral development reflecting the first stage on the conventional level – which there is a conformist attitude towards morality – in which right and wrong is determined by the majority (Bates, 2019). Some adolescents are driven to the extent of drug misuse, to gain acceptance from society, whilst damaging their health and development in the process.

Zalis (2019) demonstrates the idea that there are stereotypes attached to the image of masculinity in which men are expected to be strong and tough and to 'suck it up' when in regards to their emotions and are penalised if they were to act out of their traditional gender role. This can have a major effect on a male's emotional wellbeing if they cannot express how they feel because of judgement from society. As previously stated throughout, there are many aspects that can affect a male's mental health and wellbeing with regards to their body image. Referring back to the social media impact, Samaritans (2019) stated that 26% of suicide deaths in under twenty years-olds were internet use related. In their suicide statistics report from 2019 from the United Kingdom (UK) and Republic of Ireland (ROI), 5,185 men committed suicide in comparison to 1,674 women committing suicide. The Samaritans (2019) further argue that suicide is the biggest killer of young people reflecting that in 2018, 759 young people took their own life, and that three quarters of deaths among young people are males in the age bracket of twenty to twenty-four. It has been argued that suicide statistics for men are so high because men feel ashamed about being depressed, or are embarrassed at the idea of reaching out for help, because of the way they are brought up to behave and what society expects from them, thus being reluctant to express depressive or suicidal thoughts (Woolfe, 2017; Thornton, 2020; Baffour, 2018). With the relationship between body image, affecting the mental health of an adolescent, Whitnell (2012) pillars this view by explaining that the connection between psychiatric disorders and suicide is now well established.

Cowie (2012) identified that boys express the feeling that people have the right to commit suicide and it can solve certain problems, which demonstrates that boys already think this is an acceptable way to solve a problem rather than talking issues through. Furthermore, a study was conducted with nine to sixteen-year-olds around the topic of mental health, in which it concluded that young people's knowledge of mental health issues was very low and they lacked the emotional language to express themselves about any mental health difficulties they were experiencing. This explores the fact that the adolescent brain is not formed well enough to understand the impact of mental health issues in depth, therefore young people need to be aware of the mental health services and coping strategies available so that suicide is not the answer.

Whitnell (2012) explains there is Child and Adolescent Mental Health Service (CAHMS) which is specific to children and adolescents experiencing any mental health issues. This service provides the necessary help for children whose emotional or mental wellbeing is affected, and allows them to gain the knowledge they need for their own coping strategies. This embeds Hall's theory of Storm and Stress (1904) as throughout adolescence emotions are heightened in which they are more likely to experience anxiety or depression during this period. The hormone levels can also affect the adolescent behaviour and temperament and their actions drastically. However, it is important to consider that the Storm and Stress theory is not universal to all adolescents (Arnett, 1999), and not all adolescents experiencing mental health issues think committing suicide is the only option.

## CONCLUSION

In conclusion, there are many factors and influences that can affect a child's development. Changes in perceptions of children have been explored in terms of them being seen as nothing more than an economic asset (Aries, 1962) to the development of having to protect children's overall wellbeing. Environmental influences have significant impact on the adolescent male's development into manhood, based on how they are perceived by society. Evidence shows that specifically with adolescent boys it seems to be their physical and emotional development that are most affected in terms of their healthy wellbeing and mental health implications. With the influence of biological factors such as puberty affecting the brain functions and physical body, sociological factors affecting their self-esteem and cultural factors affecting males in a way that they need to conform to a certain stereotype of masculinity, boys go through an intense journey of development. Documentation also demonstrates that adolescents are more prone to certain implications upon their development because they are still growing and developing and are essentially at their most vulnerable point in life. Evidence further shows that, children need to be educated to enhance their knowledge around what impacts their mental health to prevent issues from leading into bigger situations, and to develop coping strategies in order to protect themselves and allow their development throughout adolescence to be successful.

## REFERENCES

Abolghasemi, A. & Rajabi, S. (2013). *The Role of Self-Regulation and Affective Control in Predicting Interpersonal Reactivity of Drug Addicts*. [Online] Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4070134/ [Accessed: 01 April 2020].

Anderson, L. (2018). *Anabolic Steroids – Abuse, Side Effects and Safety*. [Online] Available at:

https://www.drugs.com/article/anabolic-steroids.html [Accessed: 01 April 2020].

Aries, P (1962). *Centuries of Childhood: A Social History of Family Life*. New York: Vintage Books.

Arnett, J.J. (1999). Adolescent Storm and Stress, Reconsidered. *American Psychologist*. Vol. 54. No. 5, 317-326.

Baffour, F. (2018). *Male Suicide: A Silent Epidemic*. [Online] Available at: https://www.bps.org.uk/blogs/dr-funke-baffour/male-suicide-silent-epidemic [Accessed: 04 April 2020].

Bates, B. (2019). *Learning Theories Simplified*. Second Edition, London: SAGE.

Blakemore, S.J & Choudury, S. (2006). Development of the adolescent brain: implications for the executive functions and social cognition. *The Journal of Child Psychology and Psychiatry*, 47, Issue 3-4.

Carrillo, D. (2018). *Media Body Images and Males' Body Dissatisfaction, Muscularity, Disordered Eating, and Depression*. Walden University: ProQuest Dissertation Publishing.

Connell, R.W. (1983). Men's bodies. *Australian Society*, 2, 9, 33-39.

Connolly, S. (2000). *Need to Know Steroids*. Oxford: Heinemann.

Defries, M. (2014). A Unique Child: Sexualisation – Body Image. *Nursery World Select*, Vol. 2010, No. 4.

Del Giudice, M. (2014). Middle Childhood: An Evolutionary-Development Synthesis. *Child Dev Perspect*, 8: 193-200.

Doyle, P. (2013). Combating body image. *Childcare*. Vol. 9, No. 8.

Drummond, M. (2002). Men, Body Image and Eating Disorders. *International Journal of Men's Health*, Vol. 1, No. 1, pp. 79-93.

Ekern, J. (2014). *Body Dysmorphic Disorder: A Struggle for Men Too*. [Online] Available at: https://www.eatingdisorderhope.com/treatment-for-eating-disorders/special-issues/men/muscle-dysmorphia-in-men-is-an-eating-disorder [Accessed: 13/03/2020].

Elkind, D. (1967). Egocentrism in adolescence. *Child Development*, 38, 1025-1034.

Ezell, M. (1984). *John Locke's Images of Childhood: Early Eighteenth Century Response to Some Thoughts Concerning Education*. Eighteenth Century Studies, Vol. 17, No. 2, 139-155.

Fitton, V., Ahmedani, B., Harold, R. & Shifflet, E. (2013). The Role of Technology on Young Adolescent Development: Implications for Policy, Research and Practice. *Child Adolesc Soc Work*, 30:399-413.

Gauntlet, D. (2008). Media, *Gender and Identity- An Introduction*. Second Edition, London: Routledge.

Goldberg, L. (2018). *Health Effects of Steroids*. [Online] Available at: http://www.hormone.org/your-health-and-hormones/steroid-and-hormone-abuse/health-effects-of-steroids [Accessed: 31 March 2020].

GOV (1989). Children Act. [Online] Available at: http://www.legislation.gov.uk/ukpga/1989/41/section/2 [Accessed: 06 April 2020].

Hall, G. S. (1904). *Adolescence: Its psychology and its relations to physiology, anthropology, sociology, sex, crime, religion, and education*. New York, NY: Appleton.

Hayes, D. (2019). Social media and mental health. *Children and Young People*, Vol. 2018, No. 11.

Henshaw, P. (2018). Social media giants blast for poor cyber-bullying response. *SecEd*, Vol. 2018, No. 7.

Hoffses, K. (2018). *Coping with Cliques*. [Online] Available at: https://kidshealth.org/en/teens/cliques.html [Accessed: 06 April 2020].

Kidscape (2020). The effects of bullying. [Online] Available at: https://kidscape.org.uk/advice/facts-about-bullying/the-effects-of-bullying/ [Accessed: 07 April 2020].

Klump, K.L. (2013). Puberty as a critical risk for eating disorders: A review of human and animal studies. *Hormones and Behaviour*, 64, 399-410.

Lodder, G.M.A., Schlote, R.H.J., Cillessen, A.H.N. & Giletta, M. (2015). Bully Victimisation: Selection and Influence Within Adolescent Friendship Networks and Cliques. *Journal of Youth and Adolescence*, 45, 132-144 Morin, (2019) *8-year-old child Development Milestones*. [Online] Available at: http://www.verywellfamily.com/8-year-old-developmental-milestones-620729 [Accessed: 11 March 2020].

NHS (2019). Stages of puberty: what happens to boys and girls. [Online] Available at: https://www.nhs.uk/live-well/sexual-health/stages-of-puberty-what-happens-to-boys-and-girls/ [Accessed: 13 March 2020].

Open Learn (2017). *What pressures are young men feeling?* [Online] Available at: https://www.open.edu/openlearn/education-development/childhood-youth/what-pressures-are-young-men-feeling# [Accessed: 13 March 2020].

Pope, C.G., Pope, H.G., Menard, W., Fay, C., Olivardia, R. & Phillips, K.A. (2005). *Clinical features of muscle dysmorphia among males with body dysmorphic disorder*. [Online] Available at: https://www.ncbi.nlm.nih.gov/pubmed/17075613 [Accessed: 04 April 2020].

Raising Children Network (2017). *Puberty: when it's early or late*. [Online] Available at: https://raisingchildren.net.au/pre-teens/development/puberty-sexual-development/puberty-early-or-late [Accessed: 01 April 2020].

Ricciardelli, L.A. & Yager, Z. (2016). *Adolescence and Body Image: From Development to Preventing Dissatisfaction*. London: Routledge.

Ryan, R.M & Kuczkowski. R. (1994). The Imaginary Audience, Self-Conscious, and Public Individuation in Adolescence. *Journal of Personality*, 62:2.

Salmivalli, C. (2010). Bullying and the peer group: A review. *Aggression and Violent Behaviour, 15*(2), 112–120.

Samaritans (2019). *Suicide statistics report: Latest statistics for the UK and Republic of Ireland*. [Online] Available at: https://www.samaritans.org/search/?query=201

9+suicide+statistics+report [Accessed: 04 April 2020].

Steinberg, L. (2001). Adolescent Development. *Annu. Rev. Psychol*. 52:83-110.

Telegraph Media Group (2015). *How dangerous is steroid addiction? Telegraph Media Group Limited*. [Online] Available at: https://search.proquest.com/docview/1746718874/abstract/9DDF85934630414FPQ/1?accountid=16624 [Accessed: 01 April 2020].

Thornton, J. (2020). *Men and Suicide: Why it's a social issue*. [Online] Available at: https://media.samaritans.org/documents/Men-and-Suicide-Report-Samaritans.pdf [Accessed:04 April 2020].

Unicef (2020). *The United Nations Conventions on the Rights of the Child.* [Online] Available at: https://www.unicef.org.uk/what-we-do/un-convention-child-rights/ [Accessed: 06 April 2020].

Wagner, R. (2008). *Body Perceptions of Adolescent Males*. [Online] Available at: http://core.ac.uk/reader/5067344 [Accessed: 03 February 2020].

Whitnell, J. (2012). Child and adolescent mental health. *Early Years Educator,* Vol. 13, No. 11.

Woolfe, S. (2017). *Study sheds light on why the male suicide rate is so high*. [Online] Available at: https://www.thecanary.co/discovery/2017/03/26/study-sheds-light-male-suicide-rate-high/ [Accessed: 04 April 2020].

World Science Festival (2014). *The Teenage Brain is Primed for Addiction*. [Online] Available at: https://www.youtube.com/watch?v=UNAbf3J3lR0 [Accessed: 01 February 2020].

Zalis, S. (2019). *The Future of Masculinity: Overcoming Stereotypes*. [Online] Available at: https://www.forbes.com/sites/shelleyzalis/2019/01/22/the-future-of-masculinity-overcoming-stereotypes/#696e68571af3 [Accessed: 04 April 2020].

# Employees perspective of domestic abuse advocates in the workplace: Are they effective? A random-quasi study

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**ABSTRACT**

*The study aimed to identify if businesses within Newcastle have specific domestic abuse workplace policies and understand if employees have an awareness of domestic abuse and support available. The study sought to identify how many businesses within Newcastle have domestic abuse advocates, and how many of these are Northumbria Police's Workplace Domestic Violence Champion trained.*

*Research was carried out using quasi-random sampling methods, allowing for a randomised, unbiased sample selection. A mixed method approach was applied to allow the research to collate results in a timely manner in line with the deadline set by the place of study.*

*Results of the study did not conclusively answer the research question. However, it did allow the researcher to draw upon previous papers and compare the results to published data. This allowed for thematic analysis, a need for training and awareness about domestic abuse was identified. It could be concluded that because this area of research is limited, it would be beneficial to carry out further research to explore the role of domestic abuse advocates in the workplace.*

**KEYWORDS**: Domestic abuse, Domestic violence workplace champions, Workplace advocate.

## INTRODUCTION

Domestic abuse is arguably a public health concern (Peckover, 2014). The emphasis for tackling domestic abuse has been centred on prevention to try and minimise the number of abuse related cases referred to services for aim to identify if workplaces within Newcastle have domestic abuse policies and support (SafeLives, 2016). To reflect this, the National Institute for Health and Care Excellence (NICE) guidelines set out an initiative to 'de-normalise' domestic abuse in society. To do this, they aim to improve public awareness of domestic abuse and its prevalence, whilst facilitating conversations between multi-agency professionals to deepen public knowledge and gain support (NICE, 2016).

Domestic abuse is currently undefined within statutory law. However, the Government define domestic abuse as patterns of controlling or coercive behaviour consisting of violence or threatening behaviour, between intimate partners or family members, regardless of sexuality or gender, aged over sixteen. Encompassing psychological, physical, sexual, financial and emotional abuse (Strickland & Allen, 2018).

The objective of this paper is to identify if Newcastle based workplaces have domestic abuse policies in place. It will seek to understand if employees are aware of domestic abuse policies and how to access support within the workplace. The researcher aims to identify how many workplaces within Newcastle have domestic abuse advocates within the organisation and if advocates are trained by Northumbria Police's Workplace Domestic Violence Champions (WDVC) scheme. The paper will evaluate the effectiveness of domestic abuse advocates and champions within Newcastle based workplaces and discuss the implications of domestic abuse in different cohorts. It will discuss the impact of domestic abuse on individuals in the workplace, including colleagues and the place of work.

## METHODOLOGY

The ontology of the researcher's feministic approach to domestic abuse can create bias (Creswell, 2007). Furthermore, the epistemology of domestic abuse research is often influenced by a feminist viewpoint (Hester *et al.* 2010; Keeling, 2011; Wilcock & Quaid, 2018). To overcome this, the paper considers domestic abuse in all forms and its perpetration between heterosexual or homosexual couples. Research in this field often follows a pragmatist approach, using mixed method studies. Although empirical data is valuable, it is often thematically formulated qualitative data which is emphasised within published papers researching domestic abuse (Testa, *et al*., 2012).

Ethical considerations were made to ensure transparency (Knottnerus & Tugwell, 2016), and protect the identity of participants. No personal information has been requested, including the age or gender of the participant as this was unnecessary for the purpose of the research. Furthermore, participants were provided with an information sheet which included contact information for support agencies if they required support due to the sensitive nature of the research (Williamson & Burns, 2014).

Previous research in this field of study was carried out using surveys (Trade Union Congress 2014; Wathen *et al.,* 2015) available to any person affected directly or indirectly by domestic abuse. The paradigm of the research follows a mixed method approach, utilising the use of quantitative and qualitative exploration.

Morse (2010) argues that mixed method studies allow researchers to combine qualitative and quantitative measures to give an in-depth analysis of results. Kaur (2016) concurs, suggesting that mixed method studies allow researchers to take a comprehensive approach to analysing data, combining positivist and non-positivist approaches to research. Therefore, allowing researchers to understand social environments and their impacts on social or public health issues such as domestic abuse (Kaur, 2016).

## LITERATURE REVIEW

Statistical data shows an increase of the prevalence of abuse, with an estimated 2.4 million adults experiencing domestic abuse in 2019 (ONS, 2019). Women aged 20-24 years are most likely to experience abuse and across all age cohorts, men were less likely than women to be victims of abuse (ONS, 2019). Statistics consistently show that women have a one in four chance of experiencing domestic abuse (Guys, *et al*., 2015) and victims at risk of serious harm live with domestic abuse for an average of two to three years before receiving support (SafeLives, 2015).

Individuals of mixed ethnicity in the year ending 2019 were most likely to experience

domestic abuse, whilst those of Asian ethnicity were least likely to experience abuse (ONS, 2019). Anitha (2010) argues that Asian women are less likely to report abuse due to fears surrounding immigration status and access to Government funds for those not protected under UK law. Mirza (2016) concurs and argues that immigration laws *'equip perpetrators with a powerful tool of oppression*'. Furthermore, there are complex issues around Honour Based Violence, whereby women feel unable to report domestic abuse because of fear of repercussions from their family.

Statistics estimate that lost output employment hours because of domestic abuse equate to 665 days' worth of leave. It is projected that 66% of non-sexual or stalking abuse victims are in work, with a further 60% of victims of sexual assault in employment (Oliver, *et al*., 2019). This suggests that the importance of protective measures within the workplace, such as policies, advocates and workplace champions are essential to safeguard victims of domestic abuse. Research has found that over 80% of individuals surveyed about domestic abuse in the workplace believed that policy implementation could reduce the impact of the abuse (Trade Union Congress, 2014).

Although statistical data may not reflect the true scale of domestic abuse because it is a complex crime which occurs between individuals within the home; therefore, it is often a 'hidden' crime (Gov, 2019). Gertsbakh's (1988) statistical reliability theory suggests that domestic abuse data can be incorrectly interpreted, as data gathering relies solely on the reporting of abuse. It is widely accepted that domestic abuse within ethnic minorities in the UK is largely under reported for reasons such as; language barriers, immigration status, family pressure and unsupportive attitudes from frontline staff (Femi-Ajao, *et al*., 2018). Whilst it is accepted that this is a cohort that is underrepresented, statistical data still suggests that this ethnic group has the smallest prevalence of abuse.

Wright (2016) argues that the under reporting of male abuse is due to a system which was originally designed for women. Feministic theories of abuse argue that heterosexual women are primarily victims because of deep rooted social oppression (Dixon, 2014). Men have been regarded as the dominant sex, with women perceived as the weaker sex. Dixon (2014) argues that these social views of gender roles are still present within today's society and consequently domestic abuse is widely viewed as a crime which is only committed against a woman by a man.

Cannon, *et al*., (2015) argue that the feminist concept of domestic abuse suggests that women are incapable of violence and the notion that it cannot happen in same sex relationships or for a woman to be the perpetrator towards a man is socially accepted (Cannon, *et al*., 2015). Therefore, public awareness and staff training should include information that covers all genders, sexual preference and ethnicities to challenge stereotypes about domestic abuse (Lloyd, 2018).

Research about domestic abuse and the workplace is limited (Wibberley, *et al*., 2018) although the available literature is consistent in its findings that domestic abuse does negatively impact victims at work (Pillinger, *et al.,* 2019; Trade Union Congress, 2014; Wathen *et al.,* 2015). The financial impact of domestic abuse within our society can be measured as three costs; anticipation, consequence and response to abuse (Heeks, *et al*., 2018). Using this framework, the estimated cost of domestic abuse in the financial year 2016/17 was a total of £66,192 million.

The cost to the economy due to lost output because victims were unable to attend work or stay within employment in 2017 was £14,098 million. To put this into perspective, the estimated cost per victim within the year ending March 2017 was £34,015. Although this amount does not consider repeat victims or the level of intervention an individual may require (Oliver, *et al.*, 2019).

Theoretically, it is argued that employment security is an indicator of risk for domestic abuse based on a couple's employment positions. If a man is facing unemployment it is argued that he is less likely to be aggressive because he believes that a lack of earnings means that the woman is more likely to leave the relationship. However, if a woman is facing unemployment it is argued that the risk of abuse and intensity can increase; because the male believes that the woman's unstable employment makes her less inclined to leave the relationship (Anderberg, *et al*., 2016).

However, data evidences that police often do not view unemployment as a risk factor when attending an incident of domestic abuse (Robinson, *et al*., 2016). It could be argued that the lack of recognition of domestic abuse in relation to employment status can therefore increase the risk or severity of abuse because it is not recognisable as a contributing factor by authorities.

A recent Domestic Homicide Review (Reed & Lindridge, 2018) highlighted six key points in relation to workplace awareness of domestic abuse and stalking behaviours. Colleagues reported a decline in the victims' productivity at work and tried to encourage police contact. Added to this, the place of work was unaware of the Police and Crime Commissioners WDVC scheme and therefore not part of the project. Regardless of the company's large size, no staff received training to support and signpost colleagues who were victims of abuse. This lack of support was noted as a contributing factor to the fatality of the victim (Reed & Lindridge, 2018).

Research has suggested that two in ten employees had themselves, experienced domestic abuse (Pillinger, *et al*., 2019). It was identified that 16% of female respondents (compared to 13% male) were aware of a colleague who had experienced domestic abuse. Furthermore, 5% of respondents reported that they had lost their job because of domestic abuse, whilst 24% reported taking time off work. Notably, 50% of individuals reported that their performance at work was negatively impacted; individuals were unwell at work, too tired or distracted. Added to this, less than two in ten individuals were aware of resources available to offer support within work (Pillinger, *et al*., 2019).

This research can be criticised as it only contains data from six companies, throughout Europe. Therefore, it could be argued that the results are not a true representation of domestic abuse awareness or support nationally or internationally due to the small sample size in comparison to the European population. However, results of the study reflect previous research; Showalter (2016) reviewed the literature of twenty quantitative studies and concluded that workplace disruptions are commonplace for domestic abuse victims which noticeably impact productivity. Added to this, it is arguably a contributing factor to long term unemployment.

Wathen, *et al*. (2015) suggest that sustaining employment is a crucial pathway for victims to leave an abusive relationship; offering financial security and peer support from colleagues to reduce isolation. It is argued that perpetrators

can create barriers for victims to access or stay in employment to maintain their power and control of the victim (Wathen, *et al*., 2015).

Anderberg and Rainer (2012) discuss the theory of 'intrahousehold sabotage', whereby a perpetrator will sabotage the victim's ability to obtain or retain employability to exert power and control over the victim through economic abuse. During the current global Covid-19 pandemic, police reports in China show that domestic abuse has tripled. This is attributed to forced coexistence of individuals on 'lockdown' with neither member of the relationship able to leave the home to visit social networks, or attend work (Fraser, 2020).

During the lockdown restriction period, between 23rd March and 12th April 2020, there was a suspected 16 domestic abuse related homicides in the UK (Smith, 2020). This is higher than the UK yearly average for this time period. Moreover, reports suggest a 700% increase of domestic abuse related calls to support services due to the pandemic (Townsend, 2020). This suggests that the UK, like China is facing a rise in abuse because of the social restrictions placed on victims or perpetrators – including furlough from work.

In recognition of the importance of advocates within the workplace, trade unions are working to highlight the need for employers to offer suitable support. Research (Bennett & Wibberley, 2019) highlights a lack of implemented domestic abuse policies within organisations. Those with domestic abuse policies in place were deemed as ineffective; requiring disclosure of abuse to access policies was highlighted as a counterproductive approach (Bennett & Wibberley, 2019). De Jonge (2018) concurs, suggesting that seven out of ten executive companies do not perceive domestic abuse as a workplace issue and therefore do not implement domestic abuse policies.

Wibberley *et al.* (2018) discuss the awareness of support available to employees experiencing domestic abuse. Individuals do not identify union representatives or Human Resources to be a source of support for personal matters such as domestic abuse. Moreover, it is argued that advocates need to be gender equal to the victim to be willing to discuss the situation (Wibberley, *et al*., 2018). It is important to note that domestic abuse does not discriminate against gender (Gov, 2019) and it is therefore imperative to have advocates available to support all genders regardless of statistical evidence consistently showing that women have a higher probability than men to be victims of domestic abuse (SafeLives, 2015).

To provide adequate advocacy, the implementation of a domestic abuse policy, adequate training and accurate record keeping are essential steps and employer can take to improve safety and security for victims (Equality and Human Rights Commission, 2013; Unison 2017). Over 80% of individuals surveyed in 2014 said that they thought that domestic abuse policies at work coupled with entitlements such as paid leave could reduce the impact of domestic abuse at work (Trade Union Congress, 2014).

Further research argues that everybody is responsible for spotting and challenging domestic abuse, including within the workplace to safeguard colleagues. Added to this, it argues that workplaces can begin to change social norms and send out the message that domestic abuse is not accurate; therefore influencing policy change (Pillinger, 2019).

The emotional support of colleagues and advocates at work arguably provide a safe

space for employees. This is recognised as an important link for the victim to reduce the impacts of isolation and vulnerability (Trade Union Congress, 2014). Furthermore, the workplace can give the employee time away from the perpetrator and provide independence which they may not experience at home. This can be a protective factor, supporting the woman to feel empowered and able to disclose the abuse at work (Unison, 2017).

Although Dixon (2014) suggests that feministic social oppression is a barrier for disclosure. It could therefore be argued that the implementation of advocates, although evidenced as essential, may not improve rates of disclosure. Moreover, Cannon *et al.* (2015) argue that this feminist concept of domestic abuse suggests that women are incapable of violence and the notion that a victim can be a man can create even greater barriers of disclosure for male employees who are victims of abuse.

The next section will set out the findings of the study which aims to identify if workplaces within Newcastle have domestic abuse policies.

**FINDINGS**

The research aimed to identify if businesses within Newcastle have domestic abuse policies in place and identify if employees were aware of the policies and how to access support if a colleague or themselves were a victim of domestic abuse. Furthermore, the study aimed to identify how many Newcastle workplaces have domestic abuse advocates within post, who are additionally trained by Northumbria Police's WDVC scheme. The effectiveness of domestic abuse advocates is to be evaluated.

From the data source available to give a list of businesses within Newcastle, 8,022 businesses were identified. The selection of 10 post code areas then gave a possible sample size of 1,023 businesses for selection. Large proportions of these businesses had dissolved and were no longer contactable. As the methodology discusses, thirty-three individuals verbally agreed to participate (p=33) in the study. Six participants completed and returned the questionnaire (n=6). The response rate is formulated as (n/p) x 100=18%.

Lack of engagement at post graduate level of study has been researched and user engagement is described as 'a work in progress' (Hamlyn, *et al*., 2015). It could therefore be argued that undergraduate study response rates would be lower because of participant perceptions of a researcher who is not yet qualified in their field of study (I'Anson & Smith, 2004). It could be argued that because the research focus is about policy within the workplace, that individuals may be concerned about reflecting badly upon their organisation.

To understand if the sector type influenced the implementation of domestic abuse advocates, question one asked which sector the respondent represented. The most common sector was the Public Sector. The second question asks if the organisation has a domestic abuse policy in place. Fifty percent of respondents said that their workplace does have a domestic abuse policy. One individual did not know if there was a policy in place.

Two respondents stated that they have a specific domestic abuse policy. Both respondents stated that they received no induction training which made them aware of a domestic abuse policy within their organisation. One participant with a domestic abuse policy in place said that they do have a domestic abuse advocate. Participants were asked if they had a domestic abuse advocate in the workplace. Proportionally more participants said there is

not a domestic abuse advocate within their workplace.

The next seven questions give the researcher the opportunity to understand if advocates are given the opportunity to access Continuous Professional Development (CPD) training and how their role impacts individuals in the organisation. Of the two respondents in this line of questioning, one stated that there are multiple advocates to cover absence and the second stated that there is not. This would suggest that advocates are not always available due to sick days, annual leave or staff rotas for the organisation which does not implement multiple advocates.

Participants were asked if advocates are Northumbria Police WDVC trained. One responded that they were not; the second participant did not answer this question. Furthermore, the participant who stated there were multiple advocates said that advocates did receive CPD training for the role, whereas the individual who said there are not multiple advocates stated that CPD training was not available. The participant stated: *"They did an awareness course but nothing else that I know of".*

This suggests that the participant is not sure about the training the advocate has received, and their account of any CPD may be unreliable because it is not "that I know of", which does not mean further training does not occur.

Participants were asked to group five statements in order of importance for the advocate role. Neither participant rated any statement at the same level of importance as one another. Participant one (Table 1) rated emotional support as the highest importance, and signposting to other organisations as the lowest level of importance. The second participant (Table 2) rated raising awareness as the most importance with emotional support as the least level of importance. This shows that the priorities of each participant or their respective organisation differ which can therefore influence the approach to advocate implementation.

Participants were asked which services individuals were referred to for domestic abuse. These services varied and consisted of; the police, occupational health, trade unions, internal wellbeing programmes and HR. Qualitative information can be observed in question ten which asks about the perceived efficacy of the domestic abuse advocate. Both participants responded positively and said that they are good to have within the workplace so that employees had somebody to speak to whether it was for their own needs or to raise concerns about a colleague.

Questions eleven and twelve aim to understand why the organisation does not have an advocate in post and if they believe it would be beneficial to implement an advocate. Thematic analysis (Maguire & Delahunt, 2017) raised three key themes. The first identified theme was uncertainty about domestic abuse and the subsequent needs to implement an advocate. Secondly it was identified that participants felt that the organisation already had reasonable provisions in place through HR or wellbeing ambassadors within the organisation.

Notably, it was suggested that wellbeing ambassadors had resources to support individuals with their social, financial, physical and mental wellbeing. Each of these sources of support reflect many of the impacts of domestic abuse on an individual. Lastly it was identified that some participants felt that it was not the responsibility of the employer to provide this type of 'service' to employees.

Following this question, participants were asked if their organisation would benefit from a domestic abuse advocate. Findings show that fifty percent responded yes, suggesting that it would give employees a safe space to talk. Fifty percent responded no and believed that other services are available to offer support. One respondent suggested that the large organization would struggle to nationally implement domestic abuse advocacy within the workplace.

Furthermore, participants were asked if they believed a colleague would benefit from domestic abuse advocacy. One participant believed a colleague would benefit from this support which reflects statistical evidence that one in six men are victims of domestic abuse, with a higher ratio of one in four women respectively.

The penultimate question is presented as a Likert scale (Table 3); strongly agree has been assigned number one through to strongly disagree as number five. Each statement has a majority reply of 'strongly agree'. However, as the table shows some participants state that they disagree that colleagues can speak to a member of staff can speak to a colleague if they are affected by or concerned about domestic abuse.

**TABLES AND FIGURES**

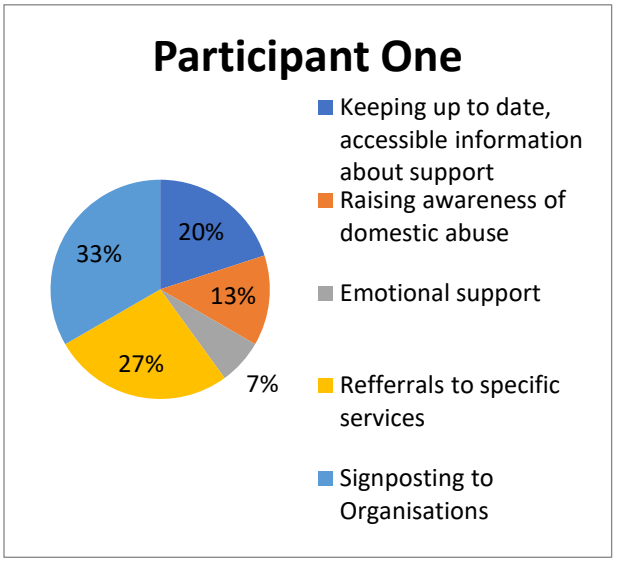
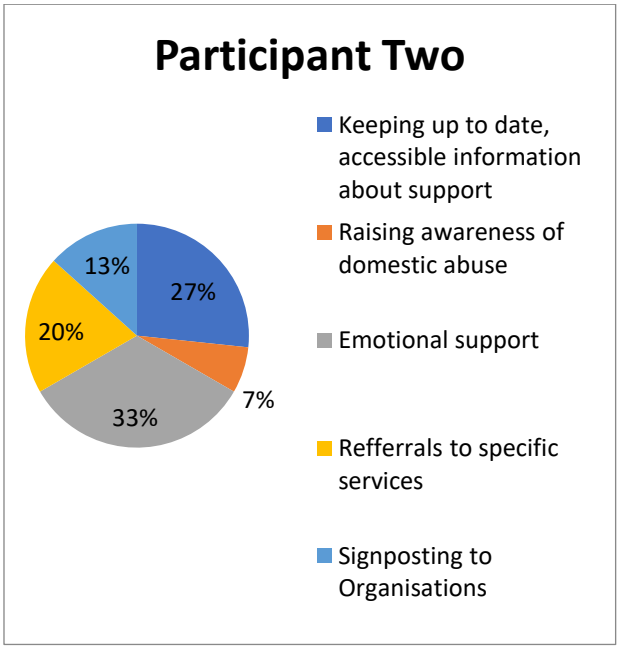



Table 1.

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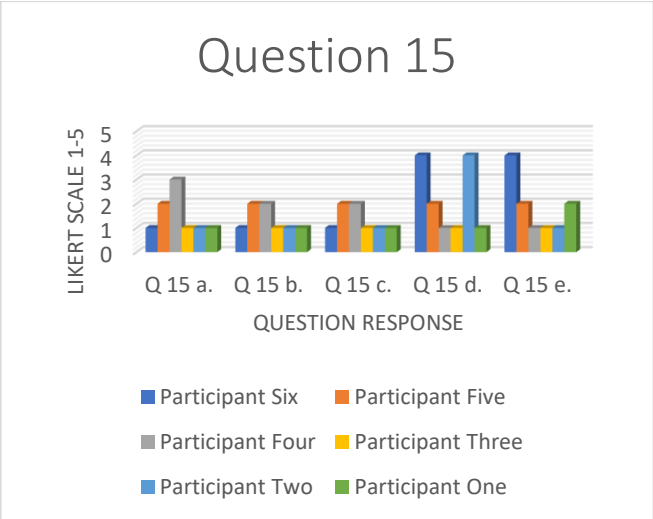


Table 3.

**CONCLUSION**

As discussed, research centered around domestic abuse is often influenced by feministic bias however, questions within the research are gender neutral and do not request information about domestic abuse perpetrated towards any specific gender. This supports an unbiased view of domestic abuse and its prevalence or impact within the workplace. Moreover, participants can be dishonest when participating in research if they believe that their viewpoints can have a negative impact. To ensure this is not an issue the anonymity of the research is fully outlines before the participant proceeds.

Many potential participants declined to contribute to the research when invited via telephone. There are many factors which can attribute to the decision to decline, such as mistrust of the researcher or concern that taking part could reflect negatively on their organization. Attitudinal barriers can impact participation; aims may not be an interesting topic for the potential participant (Hewison & Haines, 2006). Time limitations within working hours or the individual's position in the organisation could influence the decision to decline participation.

Furthermore, this small-scale study is time limited; therefore, the researcher has limited access to participants. This does not allow the research to capture a full picture of the workplaces within Newcastle and how they approach domestic abuse within the organisation. Added to the poor response rate, when participants were asked if they were happy to be contacted later to take part in a short interview, all participants declined. This did not allow the researcher to carry out an in-depth qualitative enquiry. Further discussion with participants would have allowed the researcher to ask further questions based on participants questionnaire responses to create a broader perspective.

To conclude, the research aimed to identify if Newcastle businesses have domestic abuse policies implemented within their organisation and if their employees have an awareness of domestic abuse and the support available. Moreover, the researcher aimed to identify how many organisations have domestic abuse advocates in place. Focusing on weather these advocates are Northumbria Police's WDVC trained.

To summarise the first aim, it was not possible to make a generalised conclusion about the domestic abuse policies in Newcastle based organisations due to the small response rate. This does not give a true representation of the businesses in the area. However, half of the respondents said that their workplace did have a domestic abuse policy. This could suggest that if findings were upscaled to represent the population, approximately half of the businesses in Newcastle would have a domestic abuse policy in place.

Although the findings did not identify representative sectors to understand if the

implemented policies were mainly in certain gender orientated organisations. As research suggests, domestic abuse is deeply rooted in gender oppression so it could be argued that male dominated sectors would be less responsive to the issue. Although this was inconclusive.

In relation to the second aim, most individuals appeared to have an awareness of who to contact if they were personally experiencing abuse. The research findings highlighted a lack of awareness and training in organisations which the respondent represented. It could therefore be generalised that education and awareness of domestic abuse is still an issue which needs to be addressed as a public health concern, which charities are attempting to address.

Only two respondents said that they had a domestic abuse advocate in the workplace, this would suggest that the implementation of advocates is low. However, as stated the sample population is small and therefore not a true representation of Newcastle. The researcher suggests that this aim has not been adequately met to make generalised assumptions.

Added to this, only one of the two respondents with advocates in the workplace answered the following question to identify if they were WDVC trained. Therefore, both of these aims are inconclusive, and this brings the paper back to the research question; “Employees Perspective of Domestic Abuse Advocates in the Workplace: Are They Effective?” The study can neither support nor dismiss the notion that domestic abuse advocates in the workplace are effective. This is because of the limitations previously discussed.

The research can draw upon the literature and identify similarities in responses; therefore, it could be suggested that the research concurs with the perceived importance of the implementation of domestic abuse advocates. However, training to improve awareness of the issue is a barrier to disclosure as outlined in several studies and papers. It would therefore be essential to promote the awareness of the issue within the workplace to support the positive response to domestic abuse advocates.

**REFERENCES**

Anderberg, D. & Rainer, H. (2012). Economic Abuse: A Theory of Intrahousehold Sabotage. *Journal of Public Economics,* Volume 97, pp. 282-295.

Anderberg, D., Rainer, H., Wadsworth, J. & Wilson, T. (2016). Unemployment and Domestic Violence: Theory and Evidence. *The Economic Journal*, 126(597), pp. 1947-1979.

Anitha, S. (2010). No Recourse, No Support: State Policy and Practice towards South Asian Women Facing Domestic Violence in the UK. *The British Journal of Social Work,* 40(2), p. 462–479.

Bennett, T. & Wibberley, G. (2019). *"Only when it starts crumbling down, that's when you'll know": The role of trade union officers and reps in supporting employees who are experiencing domestic violence/abuse,* s.l.: Executive Summary.

Cannon, C., Lauve-Moon, K. & Buttell, F. (2015). Re-Theorizing Intimate Partner Violence through Post-Structural Feminism, Queer Theory, and the Sociology of Gender. *Social Sciences,* Volume 4, p. 668–687.

Creswell, J. W. (2007). *Qualitive Inquiry and Research Design.* 2 ed. London: Sage Publications.

De Jonge, A. (2018). Corporate Social Responsibility Through a Feminist Lens: Domestic Violence and the Workplace in the 21st Century. *Journal of Business Ethics,* 148(3), pp. 471-487.

Dixon, J. (2014). *Feminist Theory and Domestic Violence.* New York: Springer. Equality and Human Rights Commission, 2013. *Managing and Supporting Employees Experiencing Domestic Abuse,* London: Equality and Human Rights Commission.

Femi-Ajao, O., Kendal, S. & Lovell, K. (2018). A qualitative systematic review of published work on disclosure and help-seeking for domestic violence and abuse among women from ethnic minority populations in the UK. *Journal of Ethnicity and Health.*

Fraser, E. (2020). *Impact of COVID-19Pandemicon Violence against Women and Girls,* London: VAWG Helpdesk.

Gertsbakh, I. (1988). *Statistical Reliability Theory (Probability: Pure and Applied).* New York: Marcel Dekker Inc.

GOV (2015). *Controlling or Coercive Behaviour in an Intimate or Family Relationship,* London: Home Office.

GOV (2019). *Transforming the Response to Domestic Abuse: Consultation Response and Draft Bill,* London: Gov.

Guys, J., Feinstein, L. & Griffiths, A. (2015). *Early Intervention in Domestic Violence and Abuse,* London: Early Intervention Foundation.

Hamlyn, B. (2015). *Factors affecting public engagement by researchers,* s.l.: s.n.

Heeks, M., Reed, S., Tafsiri, M. & Prince, S. (2018). *The economic and social costs of crime,* London: Home Office.

Hester, M., Donovan, C. & Fahmy, E. (2010). Feminist epistemology and the politics of method: surveying same sex domestic violence. *International Journal of Social Research Methodology,* 13(3), pp. 251-263.

I'Anson, R. & Smith, K. (2004). Undergraduate Research Projects and Dissertations: issues of topic selection, access and data collection amongst tourism management students. *Journal of Hospitality, Leisure, Sport & Tourism Education,* 2(1), pp. 19-32.

Kaur, M. (2016). Application of Mixed Method Approach in Public Health Research. *Indian Journal of Community Medecine,* 41(2), p. 93–97.

Keeling, J. J. (2010). Using a feminist standpoint to explore women's disclosure of domestic violence and their interaction with statutory agencies. *University of Chester,* pp. 1-252.

Knottnerus, J. A. & Tugwell, P. (2016). Promoting transparency of research and data needs much more attention. *Journal of Clinical Epidemiology,* Volume 70, pp. 1-3.

Lloyd, M. (2018). Domestic Violence and Education: Examining the Impact of Domestic Violence on Young Children, Children, and Young People and the Potential Role of Schools. *Frontiers In Psychology,* 9.

Maguire, M. & Delahunt, B. (2017). Doing a Thematic Analysis: A Practical, Step-by-Step Guide for Learning and Teaching Scholars. *All Ireland Journal of Teaching and Learning in Higher Education,* 8(3), pp. 3351-3354.

Mirza, N. (2016). The UK government's conflicting agendas and 'harmful' immigration policies: Shaping South Asian women's

experiences of abuse and ‘exit’. *Critical Social Policy,* 36(4), p. 592–609.

Morse, J. M. (2010). Simultaneous and Sequential Qualitative Mixed Method Designs. *Qualitative Inquiry,* 16(6), pp. 483-491.

NICE (2016). *A public health prevention approach to domestic abuse: the 'Be a Lover not a Fighter' campaign in Cheshire & Merseyside,* London: NICE.

Oliver, R., Alexander, B., Roe, S. & Wlasny, M. (2019). *The economic and social costs of domestic abuse,* London: Home Office.

ONS (2017). *Domestic abuse in England and Wales: year ending March 2017,* London: ONS.

ONS (2018). *Domestic abuse in England and Wales: year ending March 2018,* London: ONS.

ONS (2018). *Women most at risk of experiencing partner abuse in England and Wales: years ending March 2015 to 2017,* London: ONS.

ONS (2019). *Domestic abuse prevalence and trends, England and Wales: year ending March 2019* , London: ONS.

ONS (2019). *Domestic abuse victim characteristics, England and Wales: year ending March 2019,* London: ONS.

Peckover, S. (2014). Domestic Abuse, Safeguarding Children and Public Health: Towards an Analysis of Discursive Forms and Surveillant Techniques in Contemporary UK Policy and Practice. *The British Journal of Social Work,* 44(7), pp. 1770-1787.

Pillinger, J. (2019). *Toolkit on domestic violence and abuse at work: Recognise, respond and refer.* [Online] Available at: https://static1.squarespace.com/static/5cd83ed84d871178f0307100/t/5ce6640d0d9297b48f5f0da5/1558602776101/vodafone-foundation-toolkit-on-domestic-violence-at-work-recognise-respond-refer.pdf [Accessed 10 February 2020].

Pillinger, J., Bowlus, A., MacQuarrie, B. & Stancanelli, E. (2019). *Survery Held in Six Companies: 'How Does Domestic Violence Impact the Workplace?',* s.l.: s.n.

Reed, D. & Lindridge, A. (2018). *Domestic Homocide Review- Alice Ruggles,* Gateshead: Gateshead Community Safety Board.

Robinson, A. L., Pinchevsky, G. M. & Guthrie, J. A. (2016). A small constellation: risk factors informing police perceptions of domestic abuse. *Policing and Society,* 28(2), pp. 189-204.

SafeLives (2015). *Insights Idva National Dataset 2013-14,* Bristol: SafeLives.
SafeLives, 2016. *Report: A Cry for Health,* London: SafeLives.

Showalter, K. (2016). Women's employment and domestic violence: A review of the literature. *Aggression and Violent Behavior,* Volume 31 pp. 37-47.

Smith, K. I. (2020). *Coronavirus Doesn’t Cause Men’s Violence Against Women.* [Online] Available at: https://kareningalasmith.com/2020/04/15/coronavirus-doesnt-cause-mens-violence-against-women/ [Accessed 29 April 2020].

Strickland, P. & Allen, G. (2018). *Domestic Violence in England and Wales* , London: Gov.

Testa, M., Livingston, J. A. & VanZile-Tamsen, C. (2012). Advancing the Study of Violence Against Women Using Mixed Methods: Intergrating Qualitative Methods into a Quantitative Research Programme. *Violence Against Women,* 17(2), p. 236–250.

Townsend, M. (2020). *Revealed: surge in domestic violence during Covid-19 crisis.* [Online] Available at: https://www.theguardian.com/society/2020/apr/12/domestic-violence-surges-seven-hundred-per-cent-uk-coronavirus [Accessed 29 April 2020].

Trade Union Congress (2014). *Domestic Violence and the Workplace,* London: Trade Union Congress.

Unison (2017). *Domestic violence and abuse: A trade union issue,* London: Unison.

Wathen, N. C., MacGregor, J. C. & MacQuarrie, B. J. (2015). The Impact of Domestic Violence in the Workplace. *Journal of Occupational and Environmental Medecine,* 57(7), pp. 65-71.

Wibberley, G., Bennett, T., Jones, C. & Hollinrake, A. (2018). The role of trade unions in supporting victims of domestic violence in the workplace. *Industrial Relations Journal,* 49(1), pp. 69-85.

Wilcock, A. & Quaid, S. (2018). Exploring the Dynamics of Situated Emotionality in Feminist Standpoint Epistemology. *CASS.*

Williamson, A. E. & Burns, N. (2014). The Safety of Researchers and Participants in Primary Care Qualitative Research. *British Journal of General Practice,* 64(621), p. 198–200.

Wright, C. (2016). The absent voice of male domestic abuse victims: the marginalisation of men in a system originally designed for women.. *Plymouth Law and Criminal Justice Review,* Volume 8, pp. 333-350.

# How is the fashion industry adapting to the needs and wants of the ethical consumer?

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**ABSTRACT**
*Ethical consumption and the ethical consumer have become increasingly apparent in the fashion industry over the course of the 21st century. With growing concerns regarding the ethics of the fashion industry, which can negatively impact the environment and society, including climate change and human rights abuses, ethical consumerism is on the rise. The global fashion industry is responsible for greenhouse gas emissions, contributing to climate change, as well as the abuse of human rights of employees by some employers, however, despite this the fashion industry, in many instances, remains at odds with the ethical purchasing behavior of many consumers. Conversely, there are also many designers, fashion influencers and fashion companies working to lessen their impact upon the environment and improve working conditions for employees. Furthermore, the increasing spotlight on the fashion industry, highlighted in the media, is also working to provide consumers with the knowledge required to make informed ethical decisions for their fashion purchases.*

**KEYWORDS**: Ethical consumer, Ethical consumption, Fashion industry, Fast fashion, Greenhouse gas emissions

## INTRODUCTION

This report explores whether the fashion industry will ever meet the satisfactions of the ethical consumer. It will investigate the processes of manufacturing and supply of garments, the environmental conditions that people work in to create the clothes, examine the changes in consumer behaviour and consider the role of the ethical consumer.

## LITERATURE REVIEW

The ethical consumer is a member of society who wants to make a positive impact when buying a product or service to satisfy their needs and wants. There is no clear definition of what an ethical consumer is, however, Harrison *et al.* (2005) defined them as people who are choosing to buy fair trade-labelled and eco-friendly products over the price and quality. Therefore, an ethical consumer is described by their purchasing behaviour when shopping for a product that satisfies their needs and wants.

Ethical consumption within society has been on the rise since the early 2000s as consumers are considering how they can reduce the negative impacts within garment manufacturing; as Carlile (2018) explains 'the market for second-hand clothes grew 22.5% amidst a growing number of reports about the serious climate impacts of fast fashion'. Moreover, consumers are becoming more socially and environmentally driven, caring about the impact of the product and about the values of the company too.

Alaveras (2020) states that '34% of shoppers are willing to pay more for environmentally friendly products while 31% admit to not purchasing a product because of unaligned brand values and ethics.' The Ethical Consumer Conference, 2019 raised awareness of the manufacturing processes that most consumers are unaware of, such as animal testing on beauty products, environmental changes and human rights within sector supply chains.

However, the fashion industry's response is that they are not prepared to allow ethical purchasing behaviour to affect the current climate; 'fashion shows are a multimillion-dollar global business' (Blanchard, 2018), 'influencer marketing shows no signs of slowing down' (Ward, 2019) and magazines and high street stores will continue to promote the latest trends.

**MANUFACTURING AND CHEMICALS ON THE PRODUCTION LINE**

The chemicals used in the manufacturing process are harmful to the environment and cause pollution. Growing cotton to produce garments involves using large amounts of water; it is estimated that one 100% cotton jacket would use 10,330 litres of water in growing the cotton, before the production of the garment has even began (BBC, 2018). The garment will then be manufactured by a method known as wet processing, which includes dyeing and laundering.

Overall, 'around 5% of total global greenhouse gas emissions come from the fashion industry' (Nature Climate Change, 2018). Furthermore, the Boston Consulting Group has stated that the global textiles and clothing industry is responsible for consuming 79 billion cubic meters of water, 1715 million tons of carbon dioxide ($CO_2$) emissions and 92 million tons of waste; if this continues, the numbers are likely to increase by at least 50% (Šajn, 2019). Climate change has had a dramatic impact on the environment with global warming and natural disasters occurring more often (Zhou, 2020). Both Thurnberg (2019) and Davis *et al*. (2010) agree that global temperatures are rising, and $CO_2$ emissions are rapidly increasing. For this to slow down, technological and geophysical systems need to develop alternative techniques.

Smith (2018) reports that 'MPs will look at the carbon, resource use and water footprint of clothing throughout its life cycle and how clothes can be recycled, and waste and pollution reduced'. Furthermore, the European Commission's 2030 Climate and Energy Framework is proposing to cut greenhouse gas emissions to at least 40 per cent below 1990s level by 2030.

Figure 1: Landfills are full of discarded clothing in places like India (*Bain, 2015*).

As Šajn (2019) suggests: finding a more sustainable fabric mix to reduce the use of conventional cotton, improving technologies for sorting and recycling, making washing and drying more efficient, increasing energy efficiency and the use of renewable energy in technological processes are just some of the ways in which the fashion industry can reduce greenhouse gas emissions. Indeed, 'estimates show that if the number of times a garment is

worn is double, the greenhouse gas emissions would be 44% lower' (Šajn, 2019). Bamboo clothing 'requires no irrigation requiring 1/3 the amount of water to grow than is necessary for cotton' (Brady, 2014). Additionally, it yields the same volume as cotton from 10% of the land and is the fastest growing plant in the world (Bamboo Clothing, n.d.). Some companies have responded by creating bamboo clothing, such as Lucy & Yak who released a range of leggings in December 2019.

**HUMAN RIGHTS WITHIN THE FASHION INDUSTRY**

The True Cost (2015) illustrates that the fashion industry is 'complex, as it extends all the way around the world. But it's also simple, revealing just how connected we are to the many hearts and hands behind our clothes'. Documentaries, such as The True Cost, highlight the working conditions within the fashion industry.

The majority of garments for Europe come from factories in Bangladesh; the industry generates 80% of the country's total export revenue, however, there are few improvements for the lives of 3.5 million garment workers, many of which are women. Although the industry accounts for the majority of Bangladesh's revenue; workers earn little money, work long hours and the environment is unsafe, cramped and hazardous often leading to injuries and factory fires.

The Rana Plaza Disaster in 2013 is a key event that media companies documented. The building collapsed in less than 90 seconds, killing 1,134 people and injuring many more. Primark, Matalan and other high street retailers sourced clothes from the Rana Plaza, however, the full list of companies still remain unclear. After disgust over the incident, 250 companies signed two initiatives; the Accord on Fire and Building Safety in Bangladesh and the Alliance for Bangladesh Worker Safety – both were designed to improve safety in 2,300 factories supplying high street brands, however, the positive affect that these initiatives have had on the factories' environments are questioned as 'major, life-threatening concerns remain outstanding in too many factories and need to be fixed urgently' (Safi & Rushe, 2018). As evidenced by Safi & Rushe, the initiatives are outdated due to the stubbornness of the factory owners.

On Blood, Sweat and T-Shirts (2016), Dooley experienced what it was like to work in sweatshop conditions. The documentary demonstrates how physically demanding it was and how unkept the 'elite' sweatshops were however as Dooley stated there were factories in a worse condition that producers were not allowed to film in. The women working on the cotton farms were heavily pregnant and collapsing. Moreover, workers were earning between £3-£5 per day.

The documentary sparked interest and consumers began to question the ethics of the fashion industry. Additionally, War on Want (2015) explains 'many are forced to work 14-16 hours a day seven days a week, with some workers finishing at 3am only to start again the same morning at 7.30am'. In comparison, there are brands who care about how workers are being treated and want to provide as much transparency to their consumers as possible.

For example, Lucy & Yak have visited multiple factories in India, China and Thailand before choosing who makes their garments. They inspected them carefully; viewing the working conditions and how they are treated. Lucy & Yak (2020) describes 'the working conditions

and pay of all those that work hard to make Lucy & Yak a possibility is the most important thing for us.'

The poor working environments is a global issue. In 2019, a survey was conducted on the Greater Manchester textile and garment industry. There was evidence of European and other migrant workers being paid £3-£4 an hour working in insecure environments without permanent contracts, public assistance or support. MPs found that the Modern Slavery Act 2015 was not sufficient enough to stop wage exploitation and issued a series of recommendations, however, the government refused to implement any of the committees' recommendations.

In 2015, Sports Direct was under investigation when temporary workers were receiving less than the National Minimum Wage of the country for many different reasons including not working fast enough. Breaking Fashion (2019) emphasises what happens behind the scenes of *In the Style*. In episode one, the team had under a week to launch a new collection in collaboration with an influencer.

Figure 2: The Rana Plaza Disaster impact (*Quinn, 2017*).

An employee was seen pressured from the Chief Executive Officer to have a garment ready for the photoshoot, however there was not enough time. This confirms that there are issues within the fashion industry that extend beyond the production line.

## SUSTAINABLE PURCHASING BEHAVIOUR AND HOW IT IS CHANGING

Dooley (2016) emphasises that consumers are the most powerful players within the fashion game. High street retailers and high-end labels are waking up to their consumers' concerns about providing more sustainable clothing. Holloway, who runs an ethical fast fashion clothing factory argues 'just because something is fast doesn't mean to say it is bad' (2020). She believes that adapting to ethical consumption is a process that is happening, but it takes time.

H&M's Conscious Collection, Zara's Join Life and Mango stock a huge range of clothing in organic cotton, while John Lewis and Next stock smaller quantities of garments, however, 'it's still not used consistently across the collections in the biggest high street brands' (Pearlman, 2019). Fletcher & Grose (2012) argues that 'the biggest change comes from a series of small, individual actions rather than from big international declarations – a realisation that brings change within the reach of us all'.

Moreover, Alaveras (2020) highlights that 'consumers are also going to become more socially and environmentally driven caring about not only the impact a product has but the corporate responsibility of the company behind the product'. It is evident that ethical consumerism is on the rise within the millennials and Gen Z age group who are increasing in size within the consumer market. However, BBC (2020) discusses that there needs to be more awareness about ethical consumption within schools.

Social media makes it difficult for ethical consumers to combat the fast fashion culture. It takes seconds for consumers to share their latest outfits for likes, followers and engagement and as Pearlman (2019) explains influencers are consistently 'promoting the latest cult items only to be forgotten about within a few weeks'. However, Instagram hashtags and some influencers are attempting to raise a positive awareness.

Megan Ellaby promotes shopping from your wardrobe before buying into the latest trend, Lauren Rose created #ShoestringStyling that encourages followers to share outfits created from charity shop finds; the #fashionrevolution hashtag has over 1 million posts from brands and activists fighting to make a difference. This has opened up the discussion about how to become a more ethical consumer.


Figure 3: Lauren's post introducing the hashtag to encourage second-hand purchasing.

Vivienne Westwood, a fashion designer and activist, uses the mantra 'buy less, choose well, make it last' (Westwood, 2016) and encourages consumers to make positive changes to their buying habits. According to Ryding *et al*. (2018) 'the current economic and social climate has contributed towards a new consumer trend for acquiring and reusing second-hand clothing'. Worsley (2019) agrees that second-hand clothing has become known as vintage and it is 'suddenly chic' to have it.

The fashion industry is displaying positive developments towards ethical consumption. Furthermore, there is an increase in second-hand purchasing via online apps and websites like Depop and eBay. Depop takes more than £300 million per year in sales and this has doubled year on year after the app was founded in 2011 (Butler, 2018). Designer vintage stores, such as We Are Cow, encourage consumers to shop more ethically.

Roos (2017) explains that for a consumer to be as eco-friendly as possible they need to use clothes until they are worn out. Clothes swaps, kilo sales and renting high end products ensure that consumer satisfaction is met ethically, and the garment is used throughout its life cycle. However, this does not tackle the environmental issue as there is a huge surplus of collected garments and only a small percentage continue to be used as clothing.

## CONCLUSION

To conclude, the fashion industry is slowly making positive changes in response to the needs and wants of the ethical consumer, however, the changes that are being made are not sufficient enough for full ethical satisfaction. After detailed research, this report found that the industry is finding ways to improve by using technology to lower $CO_2$ emissions, improving the working conditions for employees throughout the fashion industry and, as illustrated, consumers also play a key part through their purchasing behaviour. In spite of these developments, due to the nature of the fashion industry, it appears that it may be caught in a vicious circle, because of the pressures from consumers to want more and the need to market and sell for profit; this goes back to the issue of fast fashion and somewhat

contradicts the initiatives that are being put in place. Ultimately, consumers are now armed with enough knowledge to be able to make an informed choice on ethical consumption within the fashion industry and adapt their behaviours to meet their satisfactions.

**REFERENCE LIST**

Alaveras, T. (2020). *5 Ways Marketing Will Change in 2020*. [Online] Available at: https://www.entrepreneur.com/article/345259 [Accessed: 20 January 2020].

Bamboo Clothing. (2020). *Why Is Bamboo Better?* [Online] Available at: https://bambooclothing.co.uk/why-is-bamboo-better/ [Accessed: 25 January 2020].

BBC News. (2020). Can Fashion Ever Be Ethical and Cheap? *BBC News,* [Online] 27 January. Available at: https://www.bbc.com/news/av/business-51243912/fast-fashion-can-it-ever-be-ethical-and-cheap [Accessed: 5 February 2020].

BBC Three (2018). Confronting High Street Shoppers with A Shocking Truth: Stacey Dooley Investigates. [Video Online] Available at: https://www.youtube.com/watch?v=zOe_M3GutdY [Accessed: 25 January 2020].

Blanchard, T. (2018). The View from the Front Row: A History of the Fashion Show – Photo Essay. *The Guardian,* [online] 15 February. [Online] Available at: https://www.theguardian.com/fashion/2018/feb/15/the-view-from-the-front-row-a-history-of-the-fashion-show-photo-essay [Accessed: 20 January 2020].

Brady, S. (2014). *7 Reasons Bamboo Is a Better Option than Cotton*. Cariloha, [blog]. 22 August. [Online] Available at: http://blog.cariloha.com/7-reasons-bamboo-better-option-cotton/. [Accessed: 21 January 2020].

Butler, S. (2018). Everyone I Know Buys Vintage: The Depop Sellers Shaking up Fashion. *The Guardian,* [Online] 20 October. Available at: https://www.theguardian.com/business/2018/oct/20/everyone-i-know-buys-vintage-the-depop-sellers-shaking-up-fashion [Accessed: 11 February 2020].

Carlile, C. (2018). *The Rise and Rise of the Ethical Consumer: UK Ethical Markets Worth over £83bn.* [Online] Available at: https://www.triodos.co.uk/articles/2018/the-rise-and-rise-of-the-ethical-consumer. [Accessed: 25 January 2020].

Davis, S J., Caldeira, K. and Matthews, H D. (2010). Future CO2 Emissions and Climate Change from Existing Energy Infrastructure. *Science* [e-journal] 329 (5997), pp.1330-33. https://doi.org/10.1126/science.1188566.

Ethical Consumer. (2019). Ethical Consumer Conference 2019. [Online] Available at: https://www.ethicalconsumer.org/ethical-consumer-conference-2019 [Accessed: 20 January 2020].

European Council. (2016). *2030 Climate & Energy Framework.* [pdf] Brussels: European Commission. [Online] Available at: https://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/145397.pdf [Accessed: 19 February 2020].

Fletcher, K., and Grose, L. (2012). *Fashion & Sustainability: Design for Change.* London: King.

Harrison, R., Newholm, T. and Shaw, D. (2005). *The Ethical Consumer*. London: Thousand Oaks: SAGE.

Lorna Luxe. (2019). Breaking Fashion, Series 1:1. [TV programme]. BBC, BBC Three, 18 September 2019.

Lucy & Yak. (2020). *Partners in India.* [Online] Available at: https://lucyandyak.com/pages/partners-in-india [Accessed: 27 January 2020].

Nature Climate Change. (2018). The Price of Fast Fashion. *Nature Climate Change* [e-journal] 8 (1), pp. 1. https://doi.org/10.1038/s41558-017-0058-9.

NewsRx. (2017). Environment - Environmental Impact; The fashion industry gains new tools to reduce its environmental load. *Journal of Engineering* [e-journal] 128 Available through: Newcastle College Group Library website [Accessed: 5 February 2020].

Pearlman, N. (2020). Can the High Street *ever* Be Sustainable? GLAMOUR Investigates... *Glamour UK*, [Online] Available at: https://www.glamourmagazine.co.uk/article/high-street-sustainability-debate [Accessed: 5 February 2020].

Ryding, D., Henninger, C. E. and Blazquez Cano, M. (2018). *Vintage Luxury Fashion: Exploring the Rise of the Second-Hand Clothing Trade. Advances in Luxury.* Cham, Switzerland: Palgrave Macmillan.

Safi, M. and Rushe, D. (2018). Rana Plaza, Five Years on: Safety of Workers Hangs in Balance in Bangladesh. *The Guardian*, [Online] 24 April. Available at: https://www.theguardian.com/global-development/2018/apr/24/bangladeshi-police-target-garment-workers-union-rana-plaza-five-years-on. [Accessed: 21 January 2020].

Šajn, N. (2019). *Environmental Impact of the Textile and Clothing Industry*. [pdf] EPRS | European Parliamentary Research Service. [Online] Available at: https://www.europarl.europa.eu/RegData/etudes/BRIE/2019/633143/EPRS_BRI(2019)633143_EN.pdf [Accessed: 23 January 2020].

Selfridge. (2016). 5x15 Talks: Sustainable Fashion with Stacey Dooley. [Video Online] Available at: https://www.youtube.com/watch?v=5oTbgSVu7Nw [Accessed: 25 January 2020].

Smith, S. (2018). MPs Launch Inquiry into Fashion Industry's Environmental Impact. *The Telegraph*, [Online] 22 June. Available at: https://www.telegraph.co.uk/business/2018/06/22/mps-launch-inquiry-fashion-industrys-environmental-impact/ [Accessed: 9 Feb 2020].

The True Cost, (2015). [Amazon Prime Video] Directed by Andrew Morgan. US: Life Is My Movie Entertainment.

Thunberg, G. (2019). *No One Is Too Small to Make A Difference*. S.L.: Allen Lane.

War on Want, (2015). *Sweatshops in Bangladesh.* [Online] Available at:

https://waronwant.org/sweatshops-bangladesh [Accessed: 8 February 2020].

Ward, T. (2019). The Influencer Marketing Trends That Are Coming In 2020. *Forbes*, [Online] Available at: https://www.forbes.com/sites/tomward/2019/12/27/the-influencer-marketing-trends-that-are-coming-in-2020/ [Accessed: 25 January 2020].

Westwood, V. (2016). *Get a Life: The Diaries of Vivienne Westwood 2010-2016.* [e-book] London: Serpent's Tail. Available at: Google Books [Accessed: 20 January 2020].

Worsley, H. (2019). *100 Ideas That Changed Fashion.* 1. Auflage. London: Laurence King Publishing.

Zhou, N. (2020). Australia Fires: Has the Rain Put out the Bushfires and Could They Flare Again? *The Guardian*, [Online] 21 January. Available at: https://www.theguardian.com/australia-news/2020/jan/21/australia-fires-has-the-rain-put-out-the-bushfires-and-could-they-flare-again [Accessed: 20 January 2020].

**IMAGE REFERENCE LIST**

[Figure 1]: Bain, M. (2015). H&M's "sustainability" report hides the unsustainable reality of fast fashion *Quartz.* [Online] Available at: https://qz.com/380055/hms-sustainability-report-hides-the-unsustainable-reality-of-fast-fashion/ [Accessed: 10 February 2020].

[Figure 2]: Quinn, S. (2017). 10 Truly Troubling Facts About the Clothing Industry *Listverse.* [Online] Available at: https://listverse.com/2017/03/17/10-truly-troubling-facts-about-the-clothing-industry/ [Accessed: 10 February 2020].

[Figure 3]: @loulabxlle. (2019). *Gotta put up with the rain to get the sunshine. So, I've started a hashtag! Not sure how many people […].* [Instagram]. 12 October. Available at: https://www.instagram.com/p/B3gwcsJh2Qs [Accessed: 10 February 2020].

# Can a coach influence a return to exercise for those with chronic conditions?

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**ABSTRACT**
*Having a chronic condition such as epilepsy consistently prevents individuals from participating in sport. For someone with epilepsy the fear of making the condition worse, sustaining injury or even dying (Kale, 1997) are regularly quoted as reasons for very low participation levels, known to be as low as half that of the general population (Han, Choi-Kwon and Lee, 2011). Previous research strongly suggests, that for a number of people with the condition it could be possible to compute approximate times of day for when participation may be safer. By using one or more of brain wave data, biological data and environmental information such as air quality data possible "safer" time approximation could be calculated using a seizure prediction algorithm, although the clinician should be consulted in all cases (Kamel, Badawy and Cook, 2014).*

*This article investigated whether, for those with epilepsy, should they be provided with person-specific information about their potential participation safe times whether they would participate in their chosen sport. Encouragingly, it was found that approximately 60% of those non-exercisers would return to exercise, given an holistic package of support and encouragement by an exercise professional (Collard and Marlow, 2016) armed with fact-backed assurances. A detailed exemplar programme is provided in the Appendix.*

**KEYWORDS**: Exercise, Seizure, Participation, Sport, Epilepsy

## INTRODUCTION

Epilepsy affects 50million people worldwide and as many as 600,000 in the UK alone (Epilepsy Action, 2019) Approximately 1/3rd of those are over 65, in what is an increasing problem in an ageing population, where epilepsy and its co-conditions can exacerbate each other. Despite being recognised for at least 6,000 years understanding possible causes of epilepsy remains unclear. Misconceptions that a person with epilepsy (often known as a PWE) was possessed by demons or mentally incapable (Obladen, 2013) have perpetuated the myth that treatment ought to be psychological rather than physiological in nature. Despite being so widespread, condition management, rather than a cure, has dominated clinical research - the use of exercise was previously shunned and is promoted in a limited way today (Stafstrom and Carmant, 2015).

## SPORT, HEALTH & QUALITY OF LIFE

It is now widely accepted that sport and exercise can reduce the risk of many of the conditions associated with epilepsy – think of type II diabetes, heart disease, anxiety, depression, sleep disorders and others – yet it is rarely presented in this way for epilepsy. This is despite contemporary research now recognising exercise as beneficial to both improved

cognition and physical health for many with epilepsy.

The numbers of studies taking place to ascertain the role of exercise in preventing or mitigating seizures is low but increasing, although extremely few, or perhaps even none, provide definitive results proposing it could be universally successful. Whilst some studies report improvements in some of the main impacts of epilepsy - brain function and cognition being two key ones - following exercise, there is little unqualified evidence to suggest exercise is the miracle cure hoped for. That said, it has been found in many cases that exercise can likely lead to reduced stress, enhanced wellbeing and improved Quality of Life – all clearly positive outcomes for PWEs who become or return to being active (Volpato et al., 2017).

**NON-PARTICIPATION & SEDANTRISM**

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**CHOICE OF ACTIVITY**

The outdated non-participation opinions have largely been superseded – indeed, a formal list of sports (Capovilla et al., 2015) for which PWE participation would be suitable has been published by ILAE. They do caveat their recommendations by saying a PWE ought to self-determine their participation based on their own individual seizure type and intensity. They go on to say that exercise should be done with necessary moderation coupled with sound advice from their epilepsy clinician (Kamel, Badawy and Cook, 2014).

Person-specific participation advice cannot often be sourced, even with an extended internet search or requests to epilepsy support organisations. It must be stressed, though, that those support organisations (Epilepsy Foundation, 2017) do now actively encourage participation but epilepsy-centered exercise design with any specific, tailored advice or indeed any personal recommendations remain difficult to find.

The American College of Sports Medicine is the authority on exercise for chronic conditions, but their recommendations of pragmatism and generalised design do little to inform sports coaches and exercise professionals (Verschuren et al., 2016). Indeed, even positive detailed research (Dubow and Kelly, 2003) is unable to determine which activity-types, duration or levels of intensity may be considered safest, presumably further deterring sport and exercise professionals from accepting epileptic clients.

Aerobic activity is consistently cited as the best all-round modality, research output aligned with general fitness advice from organisations such as from NHS England (NHS, 2011), who generally suggest it is a base requirement and so a candidate for use in epilepsy exercise programme planning. Resistance based exercise, yoga and increased application of coach-centered support also garner support, albeit from a smaller number of studies.

## PREDICTING SEIZURES

As already mentioned, there is a general lack of understanding of exercise with epilepsy. An inability to predict potential circadian seizure-free times with assurance, despite a probable link (Daley and DeWolfe, 2018; Karoly et al., 2017; Seneviratne et al., 2016), allied with the fear of injury or even death whilst participating mean research into the subject remains at a somewhat early stage. As a result, there is no universally accepted advice participants could be provided with by both clinical and sports professionals at to what their "optimum" training time should be.

Promising improvements in seizure prediction science in the early 21st century, combined with more recent technological advances in wearable tech (e.g. smart watches), brainwave monitoring (by EEG) and the use of Big Data mean seizure prediction capability is continually improving. Recent comparative testing of contemporary ambulatory EEG hardware reports improvements in measurement capability (Debellemaniere et al., 2018), though not yet with the hoped-for precision.

Research surrounding rhythmic seizure prediction is steadily expanding, Experimental data is being sourced from both PWEs' seizure diaries and electronic monitoring devices (Karoly et al., 2017), time-of-day cycles (Cho, 2012; Gurkas et al., 2016); additional possibilities elating to stress-generated cortisol blood concentrations and sleep patterns (Kendis et al., 2015) may further increase prediction accuracy. For a PWE it is feasible that collecting superior quality data using increasingly sophisticated hardware and processing it using more powerful prediction algorithm, an approximation of their seizure time of day susceptibility can be made.

Given access to such data, coaching and exercise professionals could exploit this time of day information to encourage participation, albeit imperfect in nature right now. This, of course, could only succeed with the application of motivational techniques and other positive psychological interventions (Collard and Marlow, 2015) based on these data.

## STUDY DESCRIPTION

The study set out to identify possible association between increased willingness to participate in assurance backed exercise and an understanding of seizure time. The format being an online questionnaire, a recognised and objective method of collecting quantitative data and regularly utilised by noted epilepsy research teams (Henning et al., 2019). A complete list of the questions is shown in the Appendix.

The online questionnaire was promoted via a number of sources; predominantly social media but also leaflet and poster campaign in the out-patient neurology unit of local general hospital. Epilepsy support organisations, public figures with epilepsy, fellow researchers, medical professionals and friends combined to help reach 372 individuals. There is confidence that the population size adequately generated quality output since average participant numbers of 219 were found in epilepsy-specific research questionnaires over the previous 20 years.

The survey was made up of a number of closed questions in to avoid errors because of any individual's interpretation. We asked a mixed variety of questions types - demographic data, those relating to the participants' epilepsy characteristics and their propensity to exercise over time, with all data remaining anonymous. The core question, the dependent variable, was:

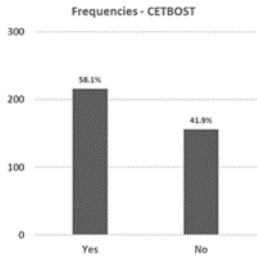
"Would you be encouraged to exercise more if you could learn the times of day you are less likely to have a seizure?"

A small amount of contingent data was also collected in the survey, intended to provide context should it have been required, this data was not used in the statistical analysis and is available for further research should it be requested. We did not use a subject control group, we collected no ranking data and all questions were nominal or ordinal (effectively multiple choice) so non-parametric testing was used. The specific test type chosen was Pearson chi-square using IBM's SPSS software.

**RESPONSE FREQUENCIES**

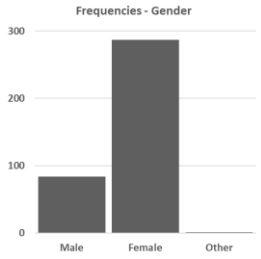
824 potential participants visited the landing page of the survey, of which 452 did not complete the questionnaire - no drop-out reasons were recorded. The final number in the study cohort was, therefore, n= 372. Candidate participation was not discriminated by any characteristic other than age, only data from adults was harvested. Detailed counts and percentage breakdowns can be found in the Appendix.

Figure 1 –Frequency for all participants



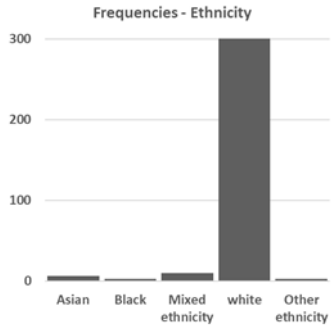

The key frequency finding was that the majority (n=216) of PWEs would consider exercise given additional seizure-time understanding, that is 58.1% of subjects.

Figure 2 – Gender frequencies



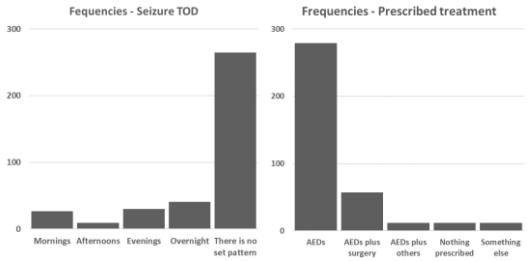

There is apparent underrepresentation in three sub-groups when compared to UK demographic data (UK Government, 2018). For gender, male subjects made up only 22.6% of the group compared to 49% in the wider population.

Figure 3 – Ethnicity frequencies

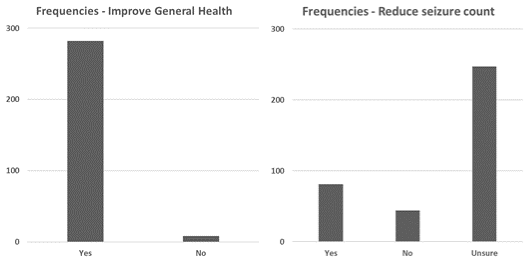



Similarly, two ethnicity sub-groups were underrepresented. Asian at 1.6% vs. 11.6% and Black at 0.8% vs. 3.0% are notably lower than statistical data provided by the Office of National Statistics (ONS, 2018).

Figures 4 & 5 – Seizure TOD and Treatment




Figures 6 & 7 – Health improvement beliefs




Other notable frequencies, represented as percentages of the total subject count, are shown above in Figures 4 and 5. They are seizure time of day (71.2% have "No set pattern"), Prescribed treatment (75.0% have AEDs alone prescribed), 75.8% voice the opinion "Exercise can help PWEs attain better health" whilst the number of people who are unsure if exercise can reduce a PWE's number of seizures is at 66.4%.

**ASSOCIATIONS**

The results demonstrate an association between those being prepared to exercise and data from three epilepsy-specific categories. Those categories being: time since last seizure (p=0.0035), knowledge of seizure time of day (p=0.0006) and those who consider taking part in exercise could help lower seizure count (p=0.0010), as summarised below:

Figure 8 - Summary of positive associations

| Time since last seizure | Known seizure TOD | Can exercise reduce seizure count | Gender |
|---|---|---|---|
| More than 1 week less than 1 month | Overnight | Yes | Female |
| p-value = 0.0035 | p-value = 0.0010 | p-value = 0.0010 | p-value = 0.0006 |

There also appears to be an association with ethnicity and willingness to exercise. Since two of the data categories for ethnicity are underrepresented here this measure was not considered for further analysis.

**DISCUSSION**

The study presumed an association between habitual exercise and whether a PWE would change, depending on specific seizure-timing knowledge, with the hypothesis stating, "Knowing seizure times will increase the propensity of PWEs to exercise". The results generally show the hypothesis holds; the majority of PWEs (58.1%) would consider exercising if they knew a time of day when seizing may be less likely.

The data showed an association with four distinct categories, those being Time since Last Seizure, Known seizure Time of Day, Gender, and those who state exercise can reduce seizure count. From this list of four all but gender demonstrated expected results, perhaps the high percentage of Females in the subject group (77.4%) skewed the results.

Three categories which showed a lack of association were particularly surprising. Age group, those who already have epilepsy-enforced low exercise levels and seizure type were, notably, not associated as had been postulated. Additionally, the nature of individuals' seizure types was wrongly assumed to have such an association, the reasoning had been any potential impact on safety during exercise by seizure type would affect a PWE's willingness. The age group to which PWEs belong also does not appear to have any bearing, the percentages across all age groups is broadly similar at between 47.1% and 66.7%.

Finally, and most interestingly, whilst those who had reduced their exercise had an expected larger frequency, (58.9% of all respondents) no statistical association was found. The other categories were either as expected or not particularly surprising by showing no associated.

## CONCLUSION

There are clear medical and psychosocial benefits for a person with epilepsy when they engage in physical activities and sports. These benefits include increased self-esteem, improved long-term general health, mitigation of comorbidities and a potential to diminish the volume of seizures.

There is currently limited understanding of specific risks of exercise for a person with epilepsy when considered for various factors such as their seizure type, frequency, their known seizure triggers especially when it is possible that they could be exercise induced. Naturally, there is apprehension regarding participation in sport and exercise and, for many epileptics, this means exercise levels are low.

This study set out to discover if a PWE would be willing to begin or restart activities if an approximate non-seizure time could be sought for them whilst not compromising safety. In general, it seems that a PWE would be willing to consider a return to exercise given such conditions, though there is very little to show statistical association other than with three particular subgroups. The groups comprise of: those who believe exercise can help the condition, those with already known seizure times and those who last had a seizure within the last month.

Few exercise professionals with specialist understanding of neurological disorders exist. though one such professional - Grant Bones of Cheshire Neuroactive inspired an exemplar ACSM based programme as detailed in the Appendix.

## FUTURE RESEARCH

The aspirational long-term outcome from future research is that exercise professionals and sports coaches can help a person who has epilepsy return to exercise using fact-based reassurance and positive psychological interventions.

Such research would require accurate collation of an individual's seizure activity over a period, the length of which is not yet wholly understood. Unfortunately understanding how to collect such data using up-to-date methods and hardware and how it should be processed with precise accuracy are also currently unknown. Assuming meaningful data collection were possible, choosing an appropriate methodology

for seizure prediction would be worthy of follow on work.

Even if such collection were possible there is no understanding of what other data types may be requisite in order to bolster the captured EEG data. For example, it may be prudent or even necessary to capture heart rate, blood pressure, body temperature, relative shallowness of breathing, body movements or other personal data, a nutrition pattern, levels of cortisol, melatonin and serotonin in the body, an "as of now" concentration of anti- epileptic drugs in the bloodstream, manually recorded seizure time of day relative to circadian patterns and potentially more.

**REFERENCES**

ACSM, (2017). *Acsm's guidelines for exercise testing and prescription*. Wolters Kluwer.

Baker, G.A., Smith, D.F., Jacoby, A., Hayes, J.A. and Chadwick, D.W. (1998). Liverpool Seizure Severity Scale revisited. Seizure, [Online] 7(3), pp.201–205. Available at: https://www.sciencedirect.com/science/article/pii/S1059131198800368 [Accessed 15 Nov. 2019].

Berg, K. (1989). Measuring balance in the elderly: preliminary development of an instrument. *Physiotherapy Canada*, 41(6), pp.304–311.

BHF (2017). Physical Inactivity Report 2017. [online] bhf.org.uk. Available at: https://www.bhf.org.uk/informationsupport/publications/statistics/physical-inactivity-report-2017 [Accessed 13 Apr. 2019].

Capovilla, G., Kaufman, K.R., Perucca, E., Moshé, S.L. and Arida, R.M. (2015). Epilepsy, seizures, physical exercise, and sports: A report from the ILAE Task Force on Sports and Epilepsy. *Epilepsia*, 57(1), pp.6–12.

Caraveo, N., Chen, S., Evrard, C. and Ozuna, J. (2015). Self-management in epilepsy: a guide for healthcare professionals. [Online] Epilepsy Centers of Excellence (ECoE). Available at: https://www.epilepsy.va.gov/Library/Self-Management%20In%20Epilepsy.pdf [Accessed Dec. 2015].

Casanova, C., Celli, B.R., Barria, P., Casas, A., Cote, C., de Torres, J.P., Jardim, J., Lopez, M.V., Marin, J.M., Montes de Oca, M., Pinto-Plata, V. and Aguirre-Jaime, A. (2010). The 6-min walk distance in healthy subjects: reference standards from seven countries. *European Respiratory Journal*, 37(1), pp.150–156.

Chan, C.J., Zou, G., Wiebe, S. and Speechley, K.N. (2015). Global assessment of the severity of epilepsy (GASE) Scale in children: Validity, reliability, responsiveness. *Epilepsia*, 56(12), pp.1950–1956.

Chetta, A., Zanini, A., Pisi, G., Aiello, M., Tzani, P., Neri, M. and Olivieri, D. (2006). Reference values for the 6-min walk test in healthy subjects 20-50 years old. *Respiratory medicine*, [Online] 100 (9), pp.1573–8. Available at: https://www.ncbi.nlm.nih.gov/pubmed/16466676 [Accessed 1 July 2019].

Cho, C.-H. (2012). Molecular mechanism of circadian rhythmicity of seizures in temporal lobe epilepsy. *Frontiers in Cellular Neuroscience*, 6 (6).

Collard, S.S. and Marlow, C. (2015). Overcoming the fear: an autoethnographic

narrative of running with epilepsy. *Qualitative Research in Sport, Exercise and Health,* 7(5), pp.688–697.

Collard, S.S. and Marlow, C. (2016). "It's such a vicious cycle": Narrative accounts of the sportsperson with epilepsy. *Psychology of Sport and Exercise*, 24, pp.56–64.

Daley, J.T. and DeWolfe, J.L. (2018). Sleep, Circadian Rhythms, and Epilepsy. *Current Treatment Options in Neurology*, 20(11).

Debellemaniere, E., Chambon, S., Pinaud, C., Thorey, V., Dehaene, D., Léger, D., Chennaoui, M., Arnal, P.J. and Galtier, M.N. (2018). Performance of an Ambulatory Dry-EEG Device for Auditory Closed-Loop Stimulation of Sleep Slow Oscillations in the Home Environment. *Frontiers in Human Neuroscience,* 12.

Dubow, J.S. and Kelly, J.P. (2003). Epilepsy in Sports and Recreation. *Sports Medicine,* 33(7), pp.499–516.

Epilepsy Action (2019). Epilepsy facts and terminology. [Online] Epilepsy.org.uk. Available at: https://www.epilepsy.org.uk/press/facts [Accessed 15 Nov. 2019].

Epilepsy Foundation (2017). Fitness and Exercise. [Online] Epilepsy Foundation. Available at: https://www.epilepsy.com/living-epilepsy/healthy-living/fitness-and-exercise/basics-exerciseprogram. [Accessed 15 Nov. 2019].

Epilepsy Society (2013). Facts and statistics. [Online] Epilepsy Society. Available at: https://www.epilepsysociety.org.uk/facts-and-statistics#.XN1lSW5KiUk [Accessed 15 Nov. 2019].

Gurkas, E., Serdaroglu, A., Hirfanoglu, T., Kartal, A., Yılmaz, U. and Bilir, E. (2016). Sleep-wake distribution and circadian patterns of epileptic seizures in children. *European Journal of Paediatric Neurology*, 20(4), pp.549–554.

Han, K., Choi-Kwon, S. and Lee, S.-K. (2011). Leisure time physical activity in patients with epilepsy in Seoul, South Korea. *Epilepsy & Behavior*, 20(2), pp.321–325.

Henning, O., Landmark, C.J., Henning, D., Nakken, K.O. and Lossius, M.I. (2019). Challenges in epilepsy—The perspective of Norwegian epilepsy patients. *Acta Neurologica Scandinavica,* 140 (1), pp.40–47.

Indoor Sport Services, (2009). Rent Home & Gym Fitness Equipment | Indoor Sport Services. [Online] Indoorsportservices.co.uk. Available at: https://indoorsportservices.co.uk/shop/department/adaptive [Accessed 15 Nov. 2019].

Kale, R. (1997). Bringing epilepsy out of the shadows. *BMJ*, 315 (7099), pp.2–3.

Kamel, J.T., Badawy, R.A.B. and Cook, M.J. (2014). Exercise-induced seizures and lateral asymmetry in patients with temporal lobe epilepsy. *Epilepsy & Behavior Case Reports,* 2, pp.26–30.

Kammerman, S. (2001). Seizure disorders: Part 1. Classification and diagnosis. *Western Journal of Medicine*, 175(2), pp.99–103.

Karoly, P.J., Ung, H., Grayden, D.B., Kuhlmann, L., Leyde, K., Cook, M.J. and

Freestone, D.R. (2017). The circadian profile of epilepsy improves seizure forecasting. *Brain*, 140 (8), pp.2169–2182.

Kendis, H., Baron, K., Schuele, S.U., Patel, B. and Attarian, H. (2015). Chronotypes in Patients with Epilepsy: Does the Type of Epilepsy Make a Difference? *Behavioural Neurology*, 2015, pp.1–4.

Meeusen, R., Duclos, M., Foster, C., Fry, A., Gleeson, M., Nieman, D., Raglin, J., Rietjens, G., Steinacker, J. and Urhausen, A. (2013). Prevention, diagnosis and treatment of the overtraining syndrome: Joint consensus statement of the European College of Sport Science (ECSS) and the American College of Sports Medicine (ACSM). *European Journal of Sport Science*, 13 (1), pp.1–24.

Moore, G., Durstine, J. and Painter, P. (2016). ACSM's Exercise Management for Persons with Chronic Diseases and Disabilities. 4th ed. Champaign, IL: *Human Kinetics*, pp.318–319.

Mrabet, H., Mrabet, A., Zouari, B. and Ghachem, R. (2004). Health-related Quality of Life of People with Epilepsy Compared with a General Reference Population: A Tunisian Study. *Epilepsia*, 45(7), pp.838–843.

Nakken, K.O. (1999). Clinical Research Physical Exercise in Outpatients with Epilepsy. Epilepsia, 40(5), pp.643–651.

Nass, R.D., Hampel, K.G., Elger, C.E. and Surges, R. (2019). Blood Pressure in Seizures and Epilepsy. *Frontiers in Neurology*, 10.

NHS (2011). Factsheet 4: Physical activity guidelines for adults. [Online] NHS. Available at: https://www.nhs.uk/Livewell/fitness/Documents/adults-19-64-years.pdf [Accessed 15 Nov. 2019].

NHS (2018). Benefits of exercise. [online] Available at: www.nhs.uk/livewell/exercise/exercise-health-benefits/.

NHS Choices (2019). Exercise. [Online] Available at: http://www.nhs.uk/live-well/exercise/ [Accessed 15 Nov. 2019].

NUStep LLC (2017). T4r. [Online] NuStep. Available at: http://www.nustep.com/international/products/t4r/. [Accessed 15 Nov. 2019].

Obladen, M. (2013). Possessed by Evil Spirits. *Journal of Child Neurology*, 29 (7), pp.990–1001.

ONS (2018). Overview of the UK population - Office for National Statistics. [online] ONS. Available at: http://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/articles/overviewoftheukpopulation/november2018 [Accessed 15 Nov. 2019].

Oxford Brookes University (2019). Exercise Prescription for Long-Term Neurological Conditions - Oxford Brookes University. [Online] Brookes.ac.uk. Available at: http://www.brookes.ac.uk/hls/cpd/course-list/exercise-prescription-for-long-term-neurological-conditions/ [Accessed 15 Nov. 2019].

Sahoo, S.K. and Fountain, N.B. (2004). Epilepsy in Football Players and Other Land-based Contact or Collision Sport Athletes. *Current Sports Medicine Reports*, 3 (5), pp.284–288.

SECA (2009). SECA 127. [Online] SECA. Available at: www.seca.com/en_bb/products/all-products/productdetails/seca217.html.

Seneviratne, U., Boston, R.C., Cook, M. and D'Souza, W. (2016). Temporal patterns of epileptiform discharges in genetic generalized epilepsies. 64, pp.18–25.

Smovey (2019). What is Smovey? [Online] Smoveyhealth. Available at: http://www.smoveyhealth.com/about-what-is-smovey.php [Accessed 15 Nov. 2019].

Sperling, M.R. (2001). Sudden Unexplained Death in Epilepsy. *Epilepsy Currents*, 1 (1), pp.21–23.

Stafstrom, C.E. and Carmant, L. (2015). Seizures and Epilepsy: An Overview for Neuroscientists. *Cold Spring Harbor Perspectives in Medicine*, [Online] 5(6), pp.a022426–a022426. Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4448698/#!po=3.48837 [Accessed 26 Apr. 2019].

Todorova, K.S., Velikova, V.S., Kaprelyan, A.G. and Tsekov, S.T. (2013). SEIZURE SEVERITY AS AN ALTERNATIVE MEASURE OF OUTCOME IN EPILEPSY. *Journal of IMAB - Annual Proceeding (Scientific Papers)*, 19 (3), pp.433–437.

UK Government (2018). Age groups. [Online] Service.gov.uk. Available at: http://www.ethnicity-facts-figures.service.gov.uk/uk-population-by-ethnicity/demographics/age-groups/latest [Accessed 15 Nov. 2019].

Vancini, R.L., de Lira, C.A.B. and Arida, R.M. (2013). Physical exercise: Potential candidate as coping strategy for people with epilepsy. *Epilepsy & Behavior*, 28 (1), p.133.

Verschuren, O., Peterson, M.D., Balemans, A.C.J. and Hurvitz, E.A. (2016). Exercise and physical activity recommendations for people with cerebral palsy. *Developmental Medicine & Child Neurology*, 58 (8), pp.798–808.

Victoria State Government (2012). Epilepsy and exercise. [Online] Vic.gov.au. Available at: http://www.betterhealth.vic.gov.au/health/conditionsandtreatments/epilepsy-and-exercise [Accessed 15 Nov. 2019].

Volpato, N., Kobashigawa, J., Yasuda, C.L., Kishimoto, S.T., Fernandes, P.T. and Cendes, F. (2017). Level of physical activity and aerobic capacity associate with quality of life in patients with temporal lobe epilepsy. *PLOS ONE*, 12(7).

Walsh-Riddle, M. and Blumenthal, J.A. (1989). Cardiovascular responses during upright and semi-recumbent cycle ergometry testing. *Medicine & Science in Sports & Exercise*, 21 (5), pp.581–585.

Wirrell, E.C. (2006). Epilepsy-related Injuries. *Epilepsia*, 47 (s1), pp.79–86.

## APPENDIX I

Figures 9 - Subject epilepsy-specific data

| Data item | | Number (n) | Percentage (%) |
|---|---|---|---|
| How long since last seizure? | 2 days or less | 61 | 16.4% |
| | More than 2 days but less than a week | 47 | 12.6% |
| | More than 1 week but less than a month | 63 | 16.9% |
| | More than 1 month but less than a year | 92 | 24.7% |
| | More than a year | 109 | 29.3% |
| Do you know precisely what time all of your seizures occur? | Mornings | 27 | 7.3% |
| | Afternoons | 9 | 2.4% |
| | Evenings | 30 | 8.1% |
| | Overnight | 41 | 11.0% |
| | No set pattern | 265 | 71.2% |
| Type of seizures? | Focal | 50 | 13.4% |
| | Tonic-clonic | 131 | 35.2% |
| | Absence | 33 | 8.9% |
| | Myoclonic | 9 | 2.4% |
| | Tonic | 3 | 0.8% |
| | Atonic | 0 | 0.0% |
| | Combination | 146 | 39.2% |
| Have you been prescribed any of the following treatments? | One or more AEDs | 279 | 75% |
| | AEDs plus surgery, including implanted devices | 57 | 15.3% |
| | AEDs plus other treatments such as ketogenic diet or exercise | 12 | 3.2% |
| | Not yet prescribed anything | 12 | 3.2% |
| | Something else | 12 | 3.2% |
| Do you know the cause of your epilepsy? | No | 183 | 49.2% |
| | Yes | 118 | 31.7% |
| | Unsure | 71 | 19.1% |
| Do AEDs control your epilepsy? | Yes | 193 | 51.9% |

| | | | |
|---|---|---|---|
| | No | 160 | 43.0% |
| | I don't take AEDs | 19 | 5.1% |

Figure 10 - Exercise specific data

| Data item | | Number (n) | Percentage (%) |
|---|---|---|---|
| Minutes of exercise per week | 0 minutes | 27 | 7.3% |
| | 30 minutes or less | 79 | 21.2% |
| | Between 30 and 150 minutes | 161 | 43.3% |
| | More than 150 minutes | 105 | 28.2% |
| Current exercise level | Inactive | 39 | 10.5% |
| | Moderately inactive | 128 | 34.4% |
| | Moderately active | 132 | 35.5% |
| | Active | 73 | 19.6% |
| Has epilepsy changed the volume of exercise you carry out | No, I was inactive before | 28 | 7.5% |
| | No, I exercise the same as before | 99 | 26.6% |
| | Yes, I have given up all exercise | 30 | 8.1% |
| | Yes, the exercise I do is less than before | 161 | 43.3% |
| | Yes, the exercise I do is more than I did before | 54 | 14.5% |
| What are the reasons for your reduced exercise levels | I fear for my safety during or shortly after exercise | 30 | 15.7% |
| | I worry that exercise will generally worsen my epilepsy | 1 | 0.5% |
| | Exercise might trigger more seizures | 20 | 10.5% |
| | I worry that exercise will make my AEDs less effective | 0 | 0.0% |
| | Seizures have me worn out, I don't want to be even more tired | 19 | 9.9% |
| | The side effects from my AEDs mean I can't face exercise | 27 | 14.1% |
| | More than one of these reasons | 68 | 35.6% |
| | Another reason | 26 | 13.6% |
| | Yes | 282 | 75.8% |
| | No | 8 | 2.2% |

| | | | |
|---|---|---|---|
| Do you think taking part in exercise can help people with epilepsy achieve better general health? | Unsure | 82 | 22.0% |
| Can taking part in exercise reduce the seizure count for people with epilepsy? | Yes | 81 | 21.8% |
| | No | 44 | 11.8% |
| | Unsure | 247 | 66.4% |
| Would you be encouraged to exercise more if you could learn the times of day you are less likely to have a seizure? | Yes | 216 | 58.1% |
| | No | 156 | 41.9% |

Figure 11- Subject demographic characteristics

| Characteristic | | Number (n) | Percentage (%) |
|---|---|---|---|
| Age band | 18 to 24 | 57 | 15.3% |
| | 25 to 39 | 196 | 41.9% |
| | 40 to 60 | 142 | 38.2% |
| | Over 60 | 17 | 4.6% |
| Gender | Male* | 84 | 22.6% |
| | Female | 287 | 77.2% |
| | Other | 1 | 0.3% |
| Ethnicity | Asian* | 6 | 1.6% |
| | Black* | 3 | 0.8% |
| | Mixed ethnicity | 10 | 2.7% |
| | White | 350 | 94.1% |
| | Other ethnicity | 3 | 0.8% |
| Family status | Married | 143 | 41.1% |
| | Single | 155 | 41.7% |
| | Other kind of relationship | 64 | 17.2% |
| Main occupation status | Employed | 205 | 55.1% |
| | Unemployed | 30 | 8.1% |
| | Unable to work | 87 | 23.4% |
| | Student | 37 | 9.9% |

| | | | |
|---|---|---|---|
| | Retired | 13 | 3.5% |

* Apparently underrepresented category

Figure 12 – Exercise Programme (establish clinical background)

| Item | Details |
|---|---|
| Presentation & Diagnosis | Typical indications are dizziness, loss of awareness, muscle stiffening followed by involuntary jerking of limbs, various timings. Clinical diagnosis to contain details such as: provoked / unprovoked, time of day, nature of seizure, potential cerebral physical cause or otherwise. |
| Prior health history | Previously activity level, request details of exercise level and evidence of sedentarism. Note pre-seizure weight, height and BMI. |
| Supporting information | Any inferior balance, additional time of day headaches, fatigue or any other physiological or clinical co-conditions. Note any anxiety levels. |

*Source* – Ian Johnston & Grant Bones

Figure 13 – Exercise Programme (prudent testing / retesting)

| Item | Details |
|---|---|
| Height | Measured in cm. Seca 217 Stadiometer (SECA, 2009), Seca UK, Birmingham, United Kingdom |
| Weight | Withings Body Cardio Scale, measured in kg. https://www.withings.com/uk/en/body-cardio (Moore, Durstine and Painter, 2016, pp.318–319). Vigilance required for any significant weight change could negatively impact AED effectiveness. |
| BMI | Measured in $kg/m^2$ using standard calculation with NHS online BMI checker for calculation https://www.nhs.uk/live-well/healthy-weight/bmi-calculator/ If obese or underweight suggest GP visit. |
| BP | Measured in systolic mmHg / diastolic mmHg. Withings Body Cardio Scale, manual inflatable cuff. Observe any elevated levels of blood pressure if outside norms 140/90mmHg or below 90/60mmHg (NHS, 2018a) ] then refer to clinician |
| HR | Withings Body Cardio Scale. Target heart rate zone at 50% to 85% percent exertion (bpm) of between 90 and 153. Max calculated as 220 – age. Recommend GP visit if heart rate at rest is continuously above 120bpm or below 40bpm (NHS, 2018b). |
| Dysrhythmia | Out of scope for the exercise physiologist. ECG trace and paper print out provided by hospital only. Be aware of any condition, it is loosely related to seizures. |

*Source* – Ian Johnston & Grant Bones

Figure 14 – Exercise Programme (Risk assessment)

| Risk | Mitigation |
|---|---|
| Inadequate first aid precaution | Exercise Physiologist training |
| Unexpected impact on AEDs | Complete checklist prior to each intervention, establish up to date information<br><br>Carry out simple questionnaire pre-session to include: Have AEDs been taken? Are emergency AEDs available? Any AED side effects or change to side effects (Moore, Durstine and Painter, 2016.<br><br>Understand the AED side effects for example Lamotrigine exhibits the following (Caraveo et al., 2015):others are (Victoria State |

| Risk | Mitigation |
|---|---|
| | Government, 2012) fatigue and tiredness, blurred vision, problems with concentration, problems with balance and coordination, poor motivation and energy, slower reaction times.<br><br>Lamotrigine, for example generally taken in the range of 200 mg–600 mg per day with expected therapeutic blood level · 2.5–15 mcg/mL. If serum levels are low or potentially appear to be low always refer the patient to neurology specialist. |
| Changes to nature / frequency / type / triggers of seizure | Establish current seizure characteristics, use accelerometer |
| Unrealistic expectation of cardio improvement | Distance covered by patient on a rudimentary track of 30m length. Measured with stopwatch. 6MWT (Chetta et al., 2006). For example, woman of 40 the mean is 611m. (Casanova et al., 2010) or 593m. (Chetta et al., 2006), accordingly use mean as target distance. |
| Fall potential as a result of poor balance | Choose appropriate methods / equipment. Check for changes in balance using 4SBT and amend exercises accordingly. Each stage measured in seconds<br><br>#7 in the Berg Balance Scale (Berg, 1989) suitable for this balance test. The BBS is for testing frailty and others don't apply.<br><br>Four stage Balance Test. (a) Feet together stand assumes feet are placed side by (b) Semi-tandem stand assumes that the instep of one foot is touching the big toe of the other foot; (c) Tandem stand assumes that one foot is placed in front of the other-heel of one foot touches the toe of other foot<br>(d) One leg stand |
| Wellbeing | Monitor score in WHO standard QoL questionnaire. Potential increase to seizure triggers. Measured at baseline, difficult to use for any kind of diagnosis, use as an indication for the practitioner to determine go / no go (Epilepsy Foundation, 2017). Several of these scales are used for epilepsy patients (Todorova et al., 2013). Also consider the Liverpool scale (Baker et al., 1998) and the GASE scale (Chan et al., 2015). Use most appropriate to the subject<br><br>The QOLIE scores are lower than general population as a rule, (49.90% compared to 77.60% in regular people (Mrabet et al., 2004) test here is to check for changes, rather than offer any kind of diagnosis. Carry out simple interview questionnaire pre-session to cover:<br><br>Preference for location (e.g., public gym not always welcomed by PWEs, especially older subjects.<br>Clinical groups do not always welcome PWEs, especially younger subjects.<br><br>If intimidated possibly use patient's home for initial part of the programme. |

| Risk | Mitigation |
|---|---|
| | Use portable equipment for aerobic machine. Use free weights or other non-intimidating equipment – an example is the Smovey (Smovey, 2019). |
| Adverse impact on co-conditions | Establish current medical information regarding co-conditions prior to each intervention |
| Inadequate protective equipment | Ensure appropriate PPE. Loose comfortable clothing to protect for grazes in the case of falls. Consider knee and elbow pads and protective cap, depending on exercise. |
| Overtraining / fatigue | Do not increase by >5% hours/week or km/week. See checklist taken by Meeusen et al. in 2013. |
| Epilepsy specific first aid capability | Complete training / certification prior to first session. Vancini et al. explain few exercise professionals know about epilepsy specific training (Vancini, de Lira and Arida, 2013).<br><br>Organisations such as Epilepsy Action (Epilepsy Action, 2019) or Epilepsy Society (Epilepsy Society, 2013) can provide training. Academic of example certified training at Brookes University (Oxford Brookes University, 2019). |

*Source – Ian Johnston & Grant Bones*

Figure 15 – Exercise Programme (staged progression)

| Exercise | Target |
|---|---|
| Warm up | 10 to 15 minutes continuous walking |
| Stretching | |
| Aerobic stage 1<br>(Accompanied walk covers 2 weeks) | Major muscle groups for 20s at a time. |
| Aerobic stage 2<br>(Recumbent bike covers 4 weeks) | |
| Aerobic stage 3<br>(Recumbent bike or adapted rower) | Increase VO2 Max. Gentle increase from 50% to 80% of peak work rate. Gentle increase from 1 to 3 sessions per week. Gentle increase from 10 to 30 minutes per session. Increase RPE from 10 to 14 |
| Strength | |
| Scheduling | Increase VO2 Max. Continue gentle increase towards 80% of peak work rate. Maintain 3 sessions p/w. Maintain 30 minutes per session. Increase RPE from 10 to 14 |

*Source – Ian Johnston & Grant Bones*

# Policy and professionalism: British values and its impact on arts education

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**ABSTRACT**
*The British Values policy and its implementation within Arts Education has been met with confusion and criticism. As topics such as tolerance and diversity are brought to the forefront of educational ethoses, the appropriate embedding of policies such as British Values can result in the difference between inclusive and exclusive learning environments.*

*This essay intends to reflect on and discuss the ways in which British Values has been implemented in Arts curriculums and evaluate the impact that these implementations may have on both British and non-British students that exist within British Arts Education programmes. With references to the Prevent Duty, safeguarding, artistic license and freedom of expression, the teacher's own understanding of British Values is also discussed – highlighting the impact that British Values may have on their own professional practice and thus, their students learning and own cultural identities.*

**KEYWORDS**: Arts Education, British Values, Freedom of Expression, Prevent Duty, Safeguarding

## INTRODUCTION

The British Values guidance (Department of Education, 2014) was published to further support the pre-existing Prevent Strategy (Home Office, 2011) which was published in order to address the ideological challenges of terrorism, counter the potential radicalisation of people and offer appropriate support and advice to those who may be involved with radicalised organisations. The strategy was subsequently adapted to form the Prevent Duty (Department of Education, 2015) which vows to work with sectors and institutions where risks of radicalisation may be more prevalent, such as in Education.

The British Values model intends to embed four key values: *democracy, the rule of law, individual liberty,* and *mutual respect and tolerance of those with different faiths and beliefs*. Prior to 2014 these values were asked to be respected and thus upheld by educational institutions, yet upon the publication of the British Values guidance (Department of Education, 2014), institutions were required to show a clear strategy that aids the embedding of these values and evidence how communication between staff and students has been effective in doing so.

The focus of this essay will be on the embedding of *individual liberty* within Arts Education and will aim to critically analyse a selection of ways in which British Values, and subsequently individual liberty, can be embedded in Arts Education with a focus on inclusivity or criticising individual beliefs and the challenges that may be faced therein. At its core, British Values proposes to encourage values that hold a lot of weight in a democratic

and multicultural society, however the association of these values with '*British-ness*' can leave the policy open to negative and insular interpretation – as if to imply that qualities such as individual liberty are qualities only possessed by those of British citizenship.

**EVALUATION OF IMPACT**

According to Article 10 of the Human Rights Act (UK Public General, 1998) *'... everyone has the right to freedom of expression ...'*. Yet this law further stipulates that this freedom *'... may be subject to formalities, conditions, restrictions, or penalties as are prescribed by law and are necessary in a democratic society'* (Human Rights Act, 1998).

Democracy is defined by implementing the views of the majority, but it is important to consider that the majority is not necessarily right. It may also be regarded as contradictory that one may possess individual liberty but only according to the prerequisites of a governing body, but this law is arguably the backbone of Contemporary Art practices – even though there are accounts of inequality (Farrington, 2013) or fears of backlash that Arts workers may face when expressing opinions outside of the accepted norm; such as voicing pro-Brexit views being likened to *career suicide* (Redmond, 2020). However, it is this law that allows artists to express their views and beliefs without fear of committing an offence, although as quoted in the legislature, views can still be subject to the criticisms of society and even if potentially harmful in nature, they could still be regarded as a breach of this law.

In an educational setting, the promotion of individual liberty in the British Values policy can be viewed along the same lines, however the British Values policy has been met with misinterpretation. Upon its implementation, educational institutes read the promotion of British Values to be akin to the promotion of British patriotism which is widely criticised due to a British history of colonialism and oppression of indigenous people – a topic of great cultural sensitivity to this day. This policy seemed to impact Arts curriculums by institutes feeling the need to promote British stereotypes and propaganda through visual imagery where the Union Jack, Queen Elizabeth II and British Armed Forces memorabilia (circa. 1939 – 1945) were prominent [Figure 1] (Bruce, 2015).

Figure 1. Details of works created by Primary students (Bruce, 2015) depicting portraits of Queen Elizabeth II.

Bruce's suggestion of utilising internationally renowned Welsh singer Shirley Bassey to '*Capitalise on events and projects ... such as Black History Month ...*' (Bruce, 2015) is also potentially questionable in taste. Even though Shirley Bassey is undoubtedly a figurehead for both Black and Female empowerment, I believe that if diversity and tolerance is to be explored beyond a surface level then teachers should look further than a British-born, Western celebrity from Cardiff, Wales to represent the history of Africa's diaspora. Although over all there is nothing inherently wrong with the explorations of these themes, it has been assessed that modern Britain as we know it today has been defined through cultural, religious and racial diversity predominantly since the end of the Second World War, but stemming back as far as the 16th Century (Ashcroft & Bevir, 2018).

Although the attempt at instilling a sense of unity amongst students is clearly intended, approximately 21% of the Primary student population in the UK is classed as *English as an Additional Language* (Department of Education, 2019) and so the promotion of British Values in the manners such as suggested by Bruce may not be inclusive to many students outside of the realms of Abrahamic and Royalist beliefs who find themselves being categorised as first, second, or even third-generation immigrants. I believe that this does not consider students who may not have any affinity for or relation to these British people, concepts, or institutions. Thus, potentially alienating students from identifying as British, if what is being presented to them is defining what it is to be British.

Although originally seemingly contradictory in its implementation, after further adaptation and evolution, British Values can now (in Arts Education) be utilised to create an environment in which students are not hesitant to express their individual beliefs and cultural interests. With modules being tailored around the sole promotion of individual liberty, in relation to inclusivity and freedom of expression, we can see the focus shift away from Britain-centric political and cultural institutions, such as in the likes of Bruce (2015), and onto the individual student who is living in Britain and is (or will become) a product of a British education. And, as Primary students may potentially become Further Education students and higher, it is important to promote inclusivity, as well as true diversity alongside British Values as early as possible in education. As these students will potentially advance towards living in, working in, and contributing towards a multicultural and diverse British society – regardless of whether they refer to themselves as British or otherwise.

**EFFECT ON TEACHER PROFESSIONALISM**

Just as the British Values policy can have an impact on the student's sense of individual liberty and identity, the policy can also have an impact of the professionalism of teachers in Arts Education – especially with regards to monitoring the student's freedom of expression or the criticism of their artistic license.

Cultural transgression, because of the discourse had through Art, has required advocates to divert away from the safety of a middle ground as originality is what questions orthodox moral codes and concepts. However, there is a difference (albeit subjective) between the *abhorrent* and the *revolutionary*. The revolutionary begs for constructive change, whereas the offensive and abhorrent only aims to humiliate a section of society.

A notable example of this would be through the negative depictions of the Suffragettes – women who fought for Female equality during the early 20th Century, and the condescension of their families and supporters (Wolton, 2017) [Figure 2]. The ability to be able to contextualise the transgressive from the offensive is a skill that Art teachers who occupy dual professionalism are more likely to own. Wenger (1998) proposes that there are five dimensions of professionalism, but two seem intrinsically relevant to the topic of dual professionalism in Arts Education: the concepts of *identity as negotiated experiences* – where what defines us as professionals is our experiences through participation (e.g., as practicing artists), and *identity as community membership* – the notion that what defines us is what we are familiar or unfamiliar with (e.g., the exploration of politically charged Art).

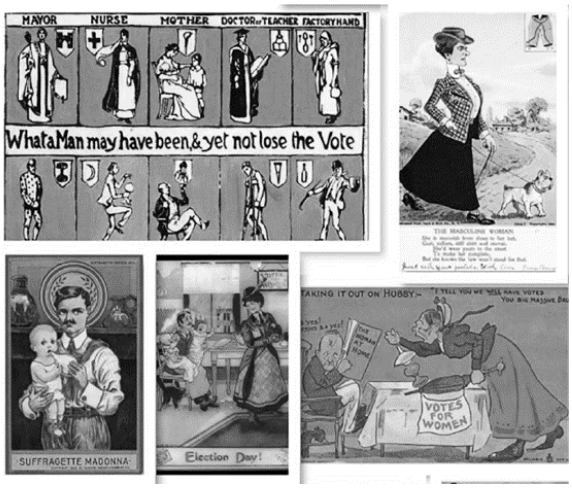


Figure 2. A collection of anti-Suffragette postcards curated by TheMindCircle (2016), referenced by Wolton (2017, p128) in 'The contradiction in the Prevent Duty: Democracy vs 'British values''.

It is thus arguable that an Art teacher without these identifiers would be challenged in contextualising the work of a student that pushes the boundaries of societal norms. The Prevent Duty, and by proxy British Values, intends to prevent the radicalisation of students through the promotion of tolerance. Yet on a surface level, an interest in particular symbolism or propaganda may suggest such radicalisation is taking place. A deeper understanding of what constitutes as offensive Art, because of dual professionalism, is beneficial in this context.

For example, if a student chooses to utilise the Swastika in their works, given its political and historical connotations, should this student be denied their artistic license and individual liberty by the teacher if the works created do not aim to ridicule or ostracise a particular group? According to the British Values policy, whether the teacher should '*... challenge extremist views ...*' (Department of Education, 2015), or the student's individual liberty, would rest on the student's ability to justify their use of the imagery in question. If the student understands the historical context behind the imagery and is not intending to humiliate or ostracise, then it would not be productive (in the active promotion of individual liberty) to limit their freedom of expression for risk of imposing an environment that supports *self-censorship* – as those who may feel that they cannot express themselves in a studio setting may look towards the ulterior embrace of radical organisations (Khaleeli, 2015).

However, it must be noted that the student (or artist) may understand the context of their works, but the viewer may not. The disconnect between artist and audience in Contemporary Arts practices is often at the forefront of discussions that revolve around inclusion in the Arts (Asomatos, 2016), and the impact of this disconnect (and thus lack of context) may result in some viewers deeming the use of seemingly offensive imagery to be normalising the assumed sentiment. To avoid this, it would again be the responsibility of those facilitating learning and who embed British Values in the curriculum to ensure that whatever is produced is not offensive in its aim, but transgressive, through the interrogation of the student's execution of their chosen form of expression. And if said execution is deemed to be ill-founded, then this is where the Prevent Duty can come into practice, by acting through appropriate channels such as talking to safeguarding managers and parents or guardians, rather than merely shutting down these forms of expression in their infancy.

**RECOMMENDATIONS**

For the British Values policy to be successfully implemented further in an Arts Education context, at any level, I would suggest that teachers try to stretch their own areas of research as far and wide as possible. With the given rise of access to information due to internet accessibility and social media

platforms being the first port of call when it comes to expressing our individual identities, I do not believe that it is acceptable to still retain an insular approach when providing students with topics or figures to research. The responsibility would thus lie on the teachers and curriculum leaders to promote British Values as truly intended, with regards to tolerance and diversity.

More broadly, the teaching of teachers in how to interpret policies such as British Values would be key to their successful implementation. By observing the confusion exhibited by institutions regarding how to best embed British Values in the curriculum, perhaps a *reader's digest* of policies and their principles would be useful. This document could explain policy in an unambiguous and clear manner, assisting teachers in interpreting the policies without explicitly telling them what to do.

This education on policy would also present opportunity to discuss the issue of *genuine concern versus paranoia* in acting on the Prevent Duty, as well as the challenge of teachers reporting students for fear of being liable rather than as a safeguarding measure. By acting within a teaching context while occupying a '*What if?*' mentality, there is scope for professional attitudes to develop somewhat xenophobic characteristics through the fear of the unknown.

In Arts Education, this unknown should not be feared and, by virtue of the liberties and freedoms of expression granted unto us, be interrogated, challenged, and explored in order to better develop not only our own attitudes with regards to tolerance and diversity, both professional and personal, but also the attitudes of our students.

**REFERENCES & BIBLIOGRAPHY**

Ashcroft, R. T. & Bevir, M. (2018). 'Multiculturalism in contemporary Britain: policy, law and theory', *Critical Review of International Social and Political Philosophy*, Vol.21(1), pp. 1–21.

Asomatos, C. (2016). 'Inclusion and Community: The Problematics of Contemporary Art in the New Democratic Paradigm', eSharp, Vol.24, Glasgow: University of Glasgow. [Online] Available at: https://www.gla.ac.uk/media/Media_461960_smxx.pdf (Accessed 20 July 2020).

Bruce, S. (2015). 'Supporting the Teaching of British Values through Art', Chalice Arts UK Ltd. [Online] Available at: http://chaliceartsuk.co.uk/wp-content/files_mf/1455746402ArtprojectstoSupportBritishValuesinSchoolPowerPointbyStephenBruce.pdf (Accessed 22 May 2020).

Department of Education (2014). 'British Values'. [Online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/380595/SMSC_Guidance_Maintained_Schools.pdf (Accessed 21 May 2020).

Department of Education (2015). 'Prevent Duty'. [Online] Available at: https://www.gov.uk/government/publications/protecting-children-from-radicalisation-the-prevent-duty (Accessed 21 May 2020).

Department of Education (2019). 'Schools, pupils and their characteristics: January 2019', pg. 9. [Online] Available at:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/812539/Schools_Pupils_and_their_Characteristics_2019_Main_Text.pdf (Accessed 21 May 2020).

Farrington, J. (2013). *Taking the offensive: Defending artistic freedom of expression in the UK, Conference Report for the Index on Censorship*. [Online] Available at: https://www.indexoncensorship.org/takingtheoffensive/ (Accessed 25 May 2020).

Furlong, J., Barton, L., Miles, S. & Whitty, G. (2000) 'Teacher Education in Transition', Buckingham: Open University Press.

Home Office (2011) 'Prevent Strategy'. [Online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/97976/prevent-strategy-review.pdf (Accessed 21 May 2020).

Khaleeli, H. (2015). You worry they could take your kids: is the prevent strategy demonising Muslim school-children? [Online] Available at: http://www.theguardian.com/uk-news/2015/sep/23/prevent-counter-terrorism-strategy-schools- demonising-muslim-children (Accessed 22 May 2020).

Malița, L. (2019). Arguing for Art, Debating Censorship, *Metacritic Journal for Comparative Studies and Theory* 5.1. [Online] Available at: https://doi.org/10.24193/mjcst.2019.7.01 (Accessed 01 June 2020)

Redmond, A. (2020). It's career suicide: arts sector muzzled over Brexit, *Arts Professional.* Available at: https://www.artsprofessional.co.uk/news/its-career-suicide-arts-sector-muzzled-over-brexit (Accessed 20 July 2020).

Taubman, P. M. (2009). *Teaching by numbers: Deconstructing the discourse of standards and accountability in education*, New York: Routledge.

UK Public General Acts (1998). Human Rights Act, Article 10. [Online] Available at: http://www.legislation.gov.uk/ukpga/1998/42/contents (Accessed 23 May 2020).

Wenger, E. (1998). *Communities of practice: Learning, meaning and identity*, Cambridge, UK: Cambridge University Press.

Wolton, S. (2017). The contradiction in the Prevent Duty: Democracy vs 'British values, *Education, Citizenship and Social Justice,* Vol.12(2), pp. 123–142.