

Running head: PHYSIOLOGICAL FACTORS AND LIFESTYLE CHOICES ON SA

The relationship between physiological factors and lifestyle choices and their impact on social anxiety

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Thesis presented in partial fulfilment of the requirements for a degree in B(A) of Psychology,
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PHYSIOLOGICAL FACTORS AND LIFESTYLE CHOICES ON SA

Abstract

Aims: The current study aimed to observe the relationship between physiological factors and lifestyle choices and their impact on social anxiety (SA). The study then aimed to observe this relationship when controlling for gender posing as another research question. **Methods:** a survey was given to the participants (N=90) as the link was provided through social media platforms such as Instagram and Facebook. The survey consisted of 5 scales measuring SA (The Liebowitz Social Anxiety Scale), sleep (The Sleep Quality Scale), alcohol (Scale of the Measurements of Attitudes Towards Alcohol), caffeine (Motives for Caffeine Consumption Questionnaire), and physical Activity (European Health Information Survey-Physical Activity Questionnaire).

Results: results showed that poor sleep quality was associated with higher rates of SA in men and women. Additionally, stronger alcohol relationships along with high SA levels were reported for men, but not women. Caffeine motives and physical activity levels were found to hold an insignificant relationship with SA. **Conclusion:** these findings add to the literature by using a multivariate approach and provide an argument for poor sleep quality and high alcohol relationship correlating with high SA and high caffeine motives and physical activity sharing no relationship. Future findings should incorporate a longitudinal study design using staged scenarios to give a more extensive evaluation.

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Literature review

According to the 5th edition of Diagnostic and Statistical Manual of Mental Disorders, Social Anxiety Disorder (SAD) is defined as the marked fear or anxiety about one or more social situations in which the individual is exposed to possible scrutiny by others (American Psychiatry Association, 2013). Examples include social interactions (e.g. having a conversation or meeting unfamiliar people), being observed (e.g. eating or drinking) or performing in front of others (e.g. giving a speech)'. One of the first known publications that mentions SA was in the early 20th century by psychologist Pierre Janet who described it as 'social phobia' (Janet, 1903). Subsequently, the Diagnostic and Statistical Manual of Mental Disorders established SA as a mental health condition as early as 1968 (Zalta et al., 2013). Despite Social Anxiety Disorder (SAD) being one of the most prominent mental disorders with 16% of the general population reporting experiencing symptoms, it is still less likely to be treated with practices such as Cognitive Based Therapy (CBT) with medication being the most preferable treatment chosen by GP's (Hidalgo et al., 2001). CBT has been found to be a more effective and affordable intervention in treating individuals with SAD in comparison to drug interventions as there is no relapse period for CBT and the sessions are spaced out over a prolonged period of time (Marvranezouli et al., 2015). The cause of SA has been attributed to several factors. One contribution to SAD has found to be anxiety-inducing behaviour of parents during childhood like

restricting a child's social engagement as an overprotective measure (Beidel and Turner, 1998). Cognitive attributes have also been a factor that has been correlated to the development of SAD such as overemphasising criticism or not accepting praise from others (Taylor & Arnow, 1991). This opens up the opportunity to explore potential correlations outside of the topic of cognition and past trauma.

Treatment and SA

Qualitative studies have also documented patients experience of the treatment they received for their SA in a clinical setting with numerous accounts stating that they were prescribed medication, such as SSRIs (Selective Serotonin Reuptake Inhibitor) and SNRIs (Serotonin-Norepinephrine Reuptake Inhibitor), despite the patients not feeling they were given an opportunity to fully express their experiences of SA with a lack of emphasis being attributed to identifying the root of the problem (Adolphe et al., 2023) . Although practices such as CBT could work to alter factors such as emotional regulation, methods such as Compassion-focused therapy (CFT) have been used to evaluate and treat negative characteristics such as high self-criticism and low self-acceptance to improve SA symptoms with a finite amount of research highlighting its effectiveness (Baumgardner & Benoit Allen, 2024). This offers the perspective that self- perception can influence SA. Self-esteem and social support have been found to significantly be improved by the promotion of health awareness and healthy lifestyles (Zhang et al., 2024). Further interventions could then promote aspects of health to improve self-esteem and social support systems in future, such as mental health education. This could prove crucial as a lack of treatment for participants experiencing SA may also be influenced for negative

viewpoints towards therapeutic methods as the *University of Massachusetts* found stigma to be the deciding factor in negative beliefs patients had towards psychotherapeutic methods (Morrison et al., 2021).

In previous studies, there was found to be factors that could influence the interpretation of social anxiety amongst participants, with research done on women with breast cancer (He et al., 2023) and also studies that evaluated participants that had depression along with SAD (Dell’Osso et al., 2023). With these factors in play, SA results could potentially be misconstrued for other underlying disorders that the participant already have. For example, SA is often misdiagnosed for conditions such as panic disorder, agoraphobia (the fear of being in a situation where it may be hard to escape and difficult to get help in time when a problem arises) and depression (Davidson, 2000). By effectively evaluating SA to differentiate it from other conditions, the relationship between physiological factors (sleep and exercise) and lifestyle choices (caffeine consumption, alcohol consumption) can be observed effectively.

Gender and SA

In terms of gender and SA, there has been found to be differences in aspects such as generality, symptomology, functionality, arousal levels, multimorbidity, and treatment seeking. The *Clinical Psychology* concluded that women are more likely to have an SAD diagnosis along with more severe symptoms. However, functionality and multimorbidity were

found to be indeterminate (Asher et al., 2017). With a reported 15.5% prevalence rate for women and a 11.1% SAD diagnosis for men, it has been found that men have been found to be more likely to seek treatment and have better symptom management as hormones such as oestrogen and progesterone may have an impact on SA levels (Weinstock, 1999). Distinctions can also be made across gender for alcohol motives, caffeine consumption, sleep quality, and physical activity. Motives for alcohol use for men has been used to improve enjoyment and overall disposition whereas women have been found to be more likely to use alcohol as an escape mechanism from negative emotions and circumstances (Cooper et al., 1994). In terms of caffeine use, men have found to have a higher caffeine consumption as they when compared to women which have been attributed a general higher body weight and metabolism (Temple et al., 2010). For sleep, women are generally found to have lower sleep quality which may be influenced by hormonal shifts (e.g. menstrual cycles) although men are found to have inferior sleep patterns such as sleep apnoea (Mallampalli et al., 2014). Intensity levels for physical activity has generally displayed diversity amongst genders as men are more likely to engage in high-intensity activity and women are more likely to engage in moderate-intensity which may be attributed to societal influence (Hallal et al., 2012).

Alcohol and SA

Alcohol use is a lifestyle choice that has been previously compared to SA. In previous studies, participants were assessed by being placed in a lab setting with a stress inducing environment being created (Morris et al., 2005). The results found that participants that reported high levels of SA displayed more of an urge to turn to alcohol in comparison to the control

group. Numerous potential SA inducing settings such as this recorded speech layout can be considered to gain a deeper understanding of how alcohol dependency can come into play as many different scenarios may cause social anxiety. In terms of the reduction of SA and hazardous drinking amongst college students, studies have found that an increase rejection of alcohol as a cope for social interaction and a decrease of positive outcomes of this alcohol use was found to cover 67% of variance in terms of treatment (Black et al., 2021). The effectiveness of treatment was assessed as total alcohol consumption, days of high alcohol consumption and alcohol-related issues. In contrast, predictions of alcohol reducing anxiety in social interactions has been found to moderate the relationship between social anxiety and alcohol consumption in undergraduate students in a study published in *Cognitive Therapy and Research* (Tran et al., 1997). However, participants that reported high SA had a lower reported alcohol consumption and frequency when compared to the portion of the sample that reported lower SA. This conveys that there was no distinction found between alcohol consumption with participants who expected alcohol to reduce anxiety levels with the high and low social anxiety participants. With contrasting results across multiple studies in terms of alcohol consumption, this may open the opportunity to explore the relationship between other aspects of alcohol and SA such as attitudes towards alcohol.

Sleep and SA

Sleep's relationship with SA is a physiological factor that has posed contrasting literature. Previous studies have looked at this relationship along with the aftermath of exposure therapy in adults diagnosed with SAD (Dutcher et al., 2021). The study found that participants

that reported a poor level of baseline sleep had a strong relationship with increased symptoms and slower improvements in terms of treatment for SA and depression. Increased total sleep was also correlated with lower SAD symptoms in the following session but held no relationship between sleep quality before or after treatment. Stress has also been found to have a significant relationship between in sleep quality and rumination, with rumination a predictor of social anxiety in college students in China (Zhang J., et al., 2024) This correlation may differ with other samples as based on mental health survey, Chinese college students have scored 42.5% for depression, 60.2% for anxiety and 33.5% for stress (Wang et al., 2024) .Various studies observed sleep as a treatment for SA with the sample solely focused on individuals with a diagnosis of SAD, with a lack of a generalised sample (Zalta et al., 2013; ten Brink et al., 2019). Incorporating a broader sample may help to bridge the gap to see if sleep can potentially be a tool for aiding extensive levels of SA. By observing sleep patterns in individuals with varying levels of SA could offer more of an insight to the relationship between these two variables ,as studies have found that sleep quality has been found to have insignificance when used to diminish SA levels along with treatments such as CBT and Mindfulness Based Stress Reduction (MBSR) for SAD patients (Hornstein et al., 2019). These findings are contradictory to previous studies that have found that SAD patients that stated that they felt ‘well rested’ the night before receiving CBT treatment reported lower symptom severity, implying that poor sleep quality positively impacts CBT treatment for SAD (Zalta et al., 2013).

Physical Activity and SA

Extensive research has compared exercise and anxiety, with studies mainly opting to compare generalised anxiety (GA) with research lacking a fixed SA contrast (Newcombe et al., 2024; Zheng et al., 2024). When exercise is compared to GA and SA, inconsistencies have been displayed as low exercise intensity shared a relationship with SA but shared no correlation with GA (Kajastus et al., 2024). This may be influenced by comorbidity as overlaps have been found with depressive symptoms (Hofmeijer et al., 2018). Physical exercise has been shown to alleviate mental disorders such as depression and substance abuse (Yan et al., 2022 ; Marcus et al., 2020) . Additionally, physical exercise has been found to have a negative correlation in its impact with SA with kids that have experiences of neglect (Hou & WG, 2021). This may imply that physical activity may be a tool for enabling more confidence or relaxation in social settings. Social Physique Anxiety is a variant of anxiety that poses similarities with SA as it develops from other people's evaluation of their physique which causes them to avoid situations to abstain from aversive emotions of criticism (Mohammadi et al., 2015). SAD symptoms share a resemblance with individuals refraining from social situations being the primary difference (American Psychiatry Association, 2013). According to the *Journal of Behavioural Addictions*, individuals that scored highly in social physique anxiety and labelled themselves as 'exercisers' displayed a high dependence to exercise with social physique anxiety acting as a mediator between this relationship (Cook et al., 2015). This may imply that social physique anxiety may cause increased exercise dependence to recompense their feelings of inadequacy. A difference in self-identity may potentially change this relationship. However, the Department of Psychology in Stanford University found that mindfulness-based interventions were found to increase positive

self-views along with decreased SAD severity among patients with a SAD diagnosis, with exercise also contributing but with less of an effect (Goldin et al., 2012). By investigating the relationship between physical activity and social anxiety solely, a better understanding of their relationship may be identified.

Caffeine and SA

Caffeine consumption is also another lifestyle choice that has been compared with social anxiety. A paper in the *Journal of Psychopharmacology* compared caffeine consumption to factors such as anxiety, stress, and depression advising that future studies take a multivariate approach with the incorporation of more lifestyle choices (Richards & Smith, 2015). The study found a significant relationship between caffeine consumption with anxiety and depression. Anxiety and depression levels of these participants were calculated in terms of frequency over the previous 6 months. By providing a more thorough evaluation of feelings of anxiety, specifically in relation to SA, it may provide a deeper understanding of the relationship between SA and caffeine consumption. A study was conducted by the *University of Pittsburgh* participants with an SAD diagnosis were evaluated on their alcohol and caffeine use, providing a multivariate approach. The study had concluded that SA patients had a greater desire for alcohol in social scenarios, but less of an impulse for caffeine drinks showing no significant relationship when compared to the control group of members by the Tri- state area, USA, (Holle et al., 1995). This provides a conflicting argument to results found by the Richard & Smith (2015). This study measured the participants intent toward alcohol use, which also poses the opportunity to address variables on a deeper scale by accounting for situational variables as well as motives behind the

use of their usage. To explore the effects of caffeine consumption across multiple disorders such as panic disorder (PD), generalised social anxiety disorder (GSAD), and performance social anxiety disorder. Over a 7-day period, 480 mg of caffeinated and non-caffeinated solution was taken by the participants, with the caffeine solution causing panic attacks in 60.7% of PD patients, 16% with GSAD and a 52.6% for PSAD (Nardi et al., 2009). Across psychiatric and non-psychiatric human studies, the *Journal of Alzheimer's* (2010) observed the potential medicinal properties of caffeine use as a mild consumption (<6 cups) was associated with decreased depressive traits, cognitive decline, and suicide probability (Cunha et al., 2010). However, in some cases caffeine has been found to produce psychotic and manic symptoms as individuals with performance social anxiety disorder were found to be sensitive to caffeine's effects (Lara, 2010). Social performance anxiety is defined as a subtype of social anxiety as it's characterized as fear of scrutiny in public speaking scenarios as its also defined as 'stage fright' (Logue, 2023). By comparing caffeine consumption to overall SA may bridge the gap for its relationship to see if caffeine may portray its medicinal benefits or if it heightens symptoms like social performance anxiety.

In conclusion, this study aims to gain a deeper understanding of physiological factors (sleep, exercise) and physiological factors (caffeine consumption, alcohol consumption) in relation to SA (hypotheses 1) while also controlling for age (hypotheses 2). For alcohol this study aims to assess the situational aspect of alcohol use by observing an individual's motives of its use before comparing it to SA. For sleep quality, the study aims to use a generalised, non-

clinical sample to bridge the gap of the contrasting reports of significance and insignificance of its impact on SA. Physical activity and social physique anxiety's relationship has been well documented, this study aims to add to the minimal literature that observes its relationship with generalised SA. For caffeine consumption and SA this study more extensive analysis of SA as well as accounting for motives regarding caffeine use to improve insight into their association. The study then will observe these correlations by controlling for gender to offer a deeper insight into the impact physiological factors and lifestyle choices may have on SA.

Hypotheses 1: What is the relationship between physiological factors and lifestyle choices on social anxiety?

Hypotheses 2: What is the relationship between physiological factors and lifestyle choices and their impact on social anxiety when controlling for gender?

Methods

Design

This study used a cross-sectional survey design was conducted to observe the relationship between physiological factors and lifestyle choices and their impact on SA at a single point in time. This was found by participants completing a self-report questionnaire assessing factors such as SA, sleep quality, alcohol motives, caffeine consumption, and physical activity. The criterion variable for this study is SA and the predictor variables are sleep quality, alcohol motives, caffeine consumption and physical activity

Participants

Participants consisted of 90 individuals between the ages of 18-74 ($M=30.9$). In terms of gender, 56.7% of the sample were male and 43.3% were female. This sample size was recruited using a combination of convenience sampling and snowball sampling through the project being promoted over social media such as Instagram and Facebook. To be eligible to participate in the

experiment, individuals must be 18 or older while also providing informed consent after going through the information sheet and consent form. Exclusion criteria included individuals with a diagnosed SA disorder or alcohol dependence disorder as these individuals may find aspects of this questionnaire distressing such as the ‘Liebowitz Social Anxiety Scale’ and the ‘Scale for the Measurements Towards Alcohol.’

Measures

The study will utilize validated self-report questionnaires to assess sleep quality, alcohol-related attitudes, caffeine consumption motives, social anxiety, and physical activity levels.

Sleep Quality Scale (SQS)

The SQS was used to assess subjective sleep quality. The scale measures factors such as sleepiness during the day, issues with waking up, subsequent energy levels after sleep, ability to start and sustain sleep, and overall sleep satisfaction

($\alpha=.92$) (Shahid et al., 2019). The SQS was found to have Cronbach's α score of 0.75 for the present sample. Total scores range from 0-84 with each answer scored from 0-3 for questions such as 'I have difficulty falling asleep' (0= "few", 1= "sometimes", 2= "often", 3= "almost always") (Snyder et al., 2018). Higher scores are perceived as having poorer sleep quality.

Scale for the Measurements of Attitudes Towards Alcohol

This instrument will measure was found to be an accurate tool for gauging an understanding for factors such as alcohol relationship and social/psychological illness ($\alpha=0.92$) using a 15-item scale with answers varying from 'strongly agree' to 'strongly disagree' (Francalani et al., 2011). The items in the scale are split between positive and negative attitudes with an accumulation of these two subscales being your total perceived attitude toward alcohol (Vargas & Luis, 2008) as the scale has been found to have excellent internal reliability in relation to this study's sample ($\alpha=0.92$).

Motives for Caffeine Consumption Questionnaire (MCCQ)

The MCCQ was the item used to assess caffeine consumption in this study (Küçükcasap, 2024). This tool is used to measure usage, vigilance, social context, and symptom management in relation to caffeine use ($\alpha=0.96$). This is conducted as a 33-item 5- point Likert Scale with answers varying from 'strongly agree' to 'strongly disagree' for questions such as 'it helps me to concentrate' or 'it improves my mood' (Ágoston et al., 2017). Each of the 33- items are split into 6 subscales: habit, alertness, mood, social relationships, taste and symptom management posing a 0.95 Cronbach's alpha for this sample. The mean scores for each subscale are then calculated along with the overall caffeine motive score to determine the individual's score. Higher scores are associated with higher motives.

Liebowitz Social Anxiety Scale

The LSAS is a 24-item scale used to measure social-anxiety levels (Liebowitz, 1987). These 24-items consist of potentially anxiety-inducing scenarios with each participant required to rate how much fear these scenarios give them and how often they avoid these situations in a 4-point Likert Scale. The scale for fear goes from 'none' (1) to 'severe' (4) and the scale for avoidance ranges from 'never' (1) to 'usually' (4) for scenarios such as 'telephoning in public' or 'being the center of attention' ($\alpha=.95$) (Baker et al., 2001). The total score is calculated by adding the fear (0='none' to 3='severe') and avoidance (0='never' to 3 'usually') scores together with totals exceeding 30 are interpreted as a social anxiety disorder and scores over

60 viewed as a generalized social anxiety disorder. This test has been found to have excellent internal reliability for fear ($\alpha=0.93$) and avoidance ($\alpha=0.92$) for this sample.

Physical Activity Questionnaire for the European Health Information Survey (PAQ-EHIS)

The Physical Activity Questionnaire was used to measure physical activity in this study. The questionnaire is used to determine how many minutes are spent in a week on transport, work, and leisure related physical activity (Finger et al., 2015). Participants are asked questions such as ‘In a typical week, how many days do you WALK for at least 10 minutes to get to and from places’ with participants required to give an estimate. To calculate scores for walking and cycling, the total minutes spent in a day is multiplied by the number of days in a week which is then converted to metabolic equivalent of task (MET) and then added together. For work-related

physical activity, a 4-part multiple choice option is given with answers such as ‘mostly sitting or standing’ is interpreted as poor physical activity and ‘mostly standing or doing jobs of moderate physical effort’ or mostly heavy labour or physical demanding work’ are considered physically active at work when participants were asked to best describe themselves at work. For leisure time physical activity, the number of minutes spent on sport, fitness and recreational activities is calculated in a week and the number of days spent on muscle-strengthening activities with at least

150 minutes (about 5 hours) and at least 2 days of muscle-strengthening activities considered to be the minimum health guidelines for these categories. Total physical activity can also be calculated for this study while accounting for the recommendations of the previous studies. The scale was found to have moderately high test-retest reliability ($r_w = 0.74$) for assessing aspects of physical activity (Sember et al., 2020). The study reported an acceptable internal consistency for the present sample ($\alpha = .67$).

Procedure

Participants were provided a link on Instagram and Facebook platforms describing the study as ‘Physiological factors and Lifestyle Choices and their impact on Social Anxiety’ with the study described as a questionnaire that will take 15-20 minutes to complete. When clicking on the link, participants are brought to a Google forms document where the questionnaire takes place with it initially showing the information sheet and consent form. For the individual to continue with the survey, they must tick the box at the end of the consent form to indicate that they have read and understood the nature of the study and agree to participate in the study. Participants then provide demographic information such as age and gender as they are then tested on items testing their social anxiety, caffeine consumption, alcohol consumption, sleep quality, and physical exercise. After completing the study, participants were given a debrief sheet that

provided services such as www.betterhelp.ie or helpline@hse.ie. These services were provided to give mental health support if individuals that may have found aspect of the study distressing.

Data Analysis

Data collection and cleaning process

The data was collected on google forms through a survey. The Information was then transferred to excel to clean the data and to define each of the variables through SPSS. In terms

of the cleaning process, some values were converted into minutes as some participants would give estimates in hours. For example, if someone answered '1h' for 'how much time do you spend going to and from places on a typical day' answers were then changed to '60'. A total of 5 participants were excluded from the study. One participant was excluded as they gave an invalid age of 100. Two participants were excluded based on their physical activity scores as their scores were unrealistic as they heavily overestimated their physical activity times causing the data to skew considerably. A further two participants were excluded from the study who identified as non-binary as this inhibited the process of conducting an accurate linear multiple regression. Participants that had missing values for certain questions were given zero.

Participants that didn't answer a question correctly were given zero. For example, a participant was asked 'how much time do you spend going to and from places on a typical day' and they answered with "I'm in a wheelchair" the participant was given zero.

Statistical analysis

Descriptive statistics were calculated for each variable to find the mean, range, 95% confidence interval, and standard deviation. Frequencies were also calculated for Gender. In order address the hypothesis 'what is the relationship between physiological factors and lifestyle choices on social anxiety' a linear multiple regression analysis was conducted with SA as the dependent variable and sleep, physical activity, alcohol, caffeine consumption variables were put in the dependent variable. A further linear regression analysis was performed with the split for file gender to investigate the hypothesis 'what is the relationship between physiological factors and lifestyle choices and their impact on social anxiety between gender'

Ethical Considerations

A potential ethical issue that may arise is that the sample may not understand the information sheet, consent form, or possible questions during the survey. To overcome this issue, contact details will be provided to the participants for them to ask about anything that they do not understand in the study. Another potential risk is participants may perform low in specific categories which may cause personal concerns of issues that may need professional advice. To overcome this mental health services will be provided in the debrief sheet. Participants with a Social Anxiety Disorder or an Alcohol Abuse Disorder may find aspects of this survey distressing. To mitigate this, participants with these diagnoses will be excluded from this study. For participants that may not have a formal diagnosis, helpful resources will be provided in the debrief sheet.

Results

Descriptive statistics

Descriptive statistics for the study variables are provided in Table 1 and the categorical variables in Table 2.

Table 1

Descriptive statistics for social anxiety, physiological factors and lifestyle choices

Variable	<i>M</i> [95% CI]	<i>SD</i>	Range
Social Anxiety	98(92.92,104.21)	26.96	51-184
Sleep	64(61.80, 65.68)	9.26	47-88

Physical Activity	2972.75(2308.73,3636.7)	3170.37	0-13892
Caffeine consumption	108.02(103.18,112.87)	23.13	33-161
Alcohol consumption	37.52(34.69, 40.35)	13.5	15-73

Table 2

Descriptive statistics for frequencies of gender and age

Variable	Frequency	Valid %
Female	39	43.3
Male	51	56.7

Inferential statistics

A linear regression analysis was conducted to determine the relationship between physiological factors and lifestyle choices on social anxiety. Preliminary analyses were conducted to determine

no violations of normality, linearity, and homoscedasticity. The correlation between the predictor variables (sleep and exercise) and the criterion variable (social anxiety) were presented in Table 2). R values ranged from .34 to -.07. Tests for multicollinearity were conducted as the Tolerance and Vif scores were found to be an acceptable range.

Table 3

Spearman's correlation analysis for between physiological factors and lifestyle choices on social anxiety

Variable	1.	2.	3.	4.	5
1.Social Anxiety	-	0.13	-.07	.34**	.29**
2. Physical Activity	0.13	-	-.06	.18	.05
3. Caffeine	-.07	-.06	-	-.05	.08
4. Alcohol	.34**	.18	-.05	-	.02
	.29**	.05	.08	.02	-

5. Sleep

Note: ** $p < .005$, values in red font are Pearson's correlation values

All predictor variables explained 16.4% of variance in social anxiety scores, ($F(4,85) = 4.18, p < .05$). Sleep was found to be the only predictor variable ($\beta = .27, p = 0.01$) of social anxiety in terms of physiological factors, as the relationship between physical activity was found to be insignificant ($\beta = 0, P = .9.15$). This is described in greater detail in Table 4.

Table 4

Linear regression model investigating the relationship between physiological factors and lifestyle choices

Variable	R^2	B	SE	β	t	p
Model	.16					
Physical Activity		0.00	.00	.01	.11	.91
Sleep		.80	.29	.27	2.77	.01
Alcohol		.52	.20	.26	2.58	.01
Caffeine		-.12	.12	-.11	-1.05	.29

Note: The Physical activity understandardized beta value in red font was calculated as 9.04E-9.

PHYSIOLOGICAL FACTORS AND LIFESTYLE CHOICES ON SA

A linear regression analysis was conducted to observe the relationship between physiological factors and lifestyle choices while controlling for gender. Preliminary analyses, such as a p-p plot, and a scatterplot were conducted to ensure there are no violations of the assumptions of normality, linearity and homoscedasticity. The correlation between the criterion variable and predictor variable are presented in Table 5 for Females and Table 6 in Men. The correlations were assessed with the r values ranging from .325 to $-.186$ for Female sample and .35 to $-.169$ for the Male sample. Tolerance and VIF scores were also calculated as they were in an acceptable range.

Table 5

Spearman's correlation analysis on predictor variables for females

Variable	1.	2.	3.	4.	5
1.Social Anxiety	-	.27	-.04	.32*	.32*
2. Physical Activity	.27	-	-.16	.28	.08
3. Caffeine	-.04	-.16	-	-.19	.07
4. Alcohol	.32*	.28	-.19	-	.009
5. Sleep	.32*	.08	.07	.009	-

*Note: *p<.05, values in red font are Pearson's correlation values*

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The predictor variables explained 22.3% of the variance in the female sample ($F(4,34) = 2.44$, $p = .06$). Sleep was found to be the strongest predictor variables in females as it shared a positive

relationship ($\beta=1.09$). Physical activity, Caffeine consumption, alcohol motives and physical activity were found to have no significance with SA (See Table 6 for more details).

Table 6

Linear regression model investigating the relationship between physiological factors and lifestyle choices for females

Variable	R^2	B	SE	β	t	p
Model	.22					
Physical Activity		.01	.002	.31	1.89	0.07
Sleep		1.09	.548	.302	1.99	0.54*
Alcohol		.52	.386	.217	1.34	1.88
Caffeine		.14	.24	.09	.56	.59

Note: * $p>.05$

Table 7

Spearman's correlation analysis on predictor variables for Men

Variable	1.	2.	3.	4.	5
1.Social Anxiety	-	-.17	-.12	.35*	.28*
2. Physical Activity	-.17	-	.04	.15	.06
3. Caffeine	-.12	.036	-	.025	.10
4. Alcohol	.35*	.15	.02	-	.031
5. Sleep	.28*	.06	.10	.031	-

*Note: * $p < .05$, values in red font are Pearson's correlation values*

The predictors variables explained 26.2% of variance for social anxiety in males ($F(4,46) = 4.08, p < .05$). Alcohol was found to be the strongest predictor of social anxiety in males as it shared a positive relationship ($\beta = .36$). Sleep was found to be the second strongest predictor of social anxiety as it also shared a positive relationship ($\beta = .25$). Physical activity and Caffeine consumption were found to have an insignificant relationship with SA (See Table 8 for more details).

Table 8

Linear multiple regression table for physiological factor and lifestyle choices and their impact on social anxiety for men

Variable	R^2	B	SE	β	t	p
	.262					
Physical activity		-.00	-.00	-.19	-1.50	.14
Sleep		.61	.30	.25	2.01	.05*
Alcohol		.61	.21	.36	2.87	.01
Caffeine		-.15	.12	-.15	-1.19	.24

Note: $p \geq .05$

Discussion

This study aimed to investigate the relationship between physiological factors (sleep and physical activity) and lifestyle choices (alcohol consumption, caffeine consumption) on SA while also controlling for gender. In terms of the first hypothesis, the predictor variables explained 16.4% of the variance with sleep and alcohol having the strongest and second strongest relationship as they were the only variables that shared significance with the criterion variable (.27 and .26 respectfully). When controlling for gender to account for the second hypothesis, the model displayed 22% of variance for males and 26.2% for females. The study found sleep and alcohol were the strongest predictors of SA with men and only sleep held significance with SA for women.

Implications

In terms of the sleep variable, the literature displayed contrasting results of significance and insignificance as treatment for SAD as there was a reported insignificance when used alongside CBT and MBSR (Hornstein et al., 2019). However, contrasting studies stated that participants that reported feelings of having a good night sleep displayed less symptom severity (Zalta et al., 2013). A snowball effect was found with college students with poor sleep leading to SA with stress leading to this correlation. Based on the present study's findings, Sleep was found to have the strongest relationship with SA (.27) when compared to the other predictor variables as it shared a significant relationship. When controlling for gender, it was found that sleep was found to have a connection with SA with males and females. This may imply that improving sleep

quality could be an essential part of improving SA which is supported by the previous literature. However, alcohol motives were found to have a correlation with SA with men, but not women. This may be because men have been shown to use alcohol as a tool for enjoying things more, particularly social events whereas women have been shown to use alcohol to deal with negative emotions rather than pleasure (Cooper et al., 1994). Alcohol was found to be the second strongest predictor of SA (.26) between all the variables as the relationship was found to be significant. This ties in with previous literature that assessed SA by creating a public speaking scenario as the participant was observed of their urge to turn to alcohol as a coping tool, with a significant relationship also being found (Morris et al., 2005). This study helped to bridge the gap by assessing all facets of SA amongst the participants. Caffeine motives were found to be the weakest predictor of SA amongst all the variables (-.11) as this relationship was found to be insignificant. This offers an opposing argument to literature stating that individuals' caffeine has a correlation between anxiety and depression (Richard & Smith, 2015). It also offers an opposing argument to claims that individuals with a diagnosis of performance SA may be at risk to high caffeine use as they may be more sensitive to the anxiogenic effects (Lara, 2010) with high caffeine motives bearing no relationship in the present study. Physical activity was found to have the least significance of all the variables in this study (.91) as no correlation was found with SA. This offers contrast with previous reports from the literature as physical activity was found to negatively correlate with experiences of SA (Hou & WG, 2021). Previous literature states that improving your self-image through mindfulness-based interventions has resulted in decreased SA traits with individuals that have an SA diagnosis, displaying a more significant relationship

than Physical activity (Goldin et al., 2012). This may prove to be a better approach when improving SA levels given that the existing study presented no relationship with Physical activity.

Strengths

The current study presented numerous strengths such as a generally high internal reliability present across the scales implemented in this study as Cronbach's α scores ranged from .67 to .95 with alcohol, caffeine and SA posing excellent internal reliability (Cronbach's $\alpha \geq .92$).

The study also offered a multivariate response comparing 4 variables to SA with caffeine motives and alcohol attitudes representing the lifestyle choices, creating a bivariate analysis which was advised by Richard & Smith (2015) for future studies as they compared caffeine use to anxiety, depression, and stress related variables. Sleep Quality and Physical activity were also categorized as physiological factors to add more predictor variables to this multivariate study.

Another strength of this study was the assessment of SA as it

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evaluated all aspects of SA, compared to previous studies that evaluated forms of SA such as social performance anxiety's relationship with caffeine and social physique anxiety's connection with physical activity (Lara et al., 2010; Cook et al., 2015). Another strength of the study is that it provided a large sample size (N=90) as this provided the study with more statistical power and

allowed the study to successfully evaluate the subgroups of the study when controlling for gender.

Limitations

Several limitations were noted over the course of this study, with one being the sole reliance of self-report measures as this poses the opportunity for participants to not provide honest or accurate evaluations of the variables being assessed. This was found with the Physical Activity Questionnaire as two participants were excluded from the study to avoid skewing the data too heavily as they reported extreme overevaluations of their physical activity levels. Another limitation was the cross-sectional design that was used in this study, as variables such as sleep quality may vary if a cross-sectional approach was taken. Another limitation is that correlation does not mean causation as the present study provides contrasting evidence for previous literature. For example, physical activity was found to have no correlation in this study, but previous studies have shown a negative correlation for physical activity and SA for children with experiences of neglect proving that results may vary dependent on the sample size (Hou & WG, 2012).

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Conclusion

This study adds to the literature of SA by observing how physiological factors and lifestyle choices may correlate. This contributed by providing a multivariate approach to assessing SA with results aligning with previous studies that have found a correlation with sleep quality across both genders and alcohol attitudes amongst men. This may offer an insight into improving SA as the present study's findings suggests that improved sleep quality and a decreased dependence on alcohol use can decrease SA severity. It also added an argument against physical activity and caffeine use sharing a relationship with SA. To improve future research, studies should incorporate experiments to assess the use of variables more accurately (e.g. observing the urge of a participant to turn to caffeine in a social setting) rather than having a sole reliance on self-report measures as this high subjectivity and social desirability bias. A longitudinal approach should also be incorporated to more accurately observe the relationship between these variables over a long period of time.

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Appendices

Appendix A: Information Sheet

Purpose of the Study. I am David Tominiyi-Dunne a third year student B(A) Psychology student at National College of Ireland. I am undertaking this research study, *the relationship between physiological factors and lifestyle choices on social anxiety*, as part of my studies for my research proposal. This research is focused on explaining the relationship between social anxiety a host of physiological and lifestyle variables.

What will the study involve? The study will involve the completion of a questionnaire that will take roughly 15-20 minutes to complete. Questions assess factors such as social anxiety, screen time, sleep, alcohol consumption, caffeine consumption, and exercise.

Who has approved this study? This study has been reviewed and received ethical approval from National College of Ireland Research Ethics Committee (Social Research Ethics Sub-Committee) You may have a copy of this approval if you request it and the approval no. from National College of Ireland is XXX.

Do you have to take part?

No, you are under no obligation whatsoever to take part in this research. However, we hope that you will agree to take part and give us some of your time to complete the survey. It is entirely up to you to decide whether or not you would like to take part. If you decide to do so, you will be asked to sign a digital consent form and you will be forwarded a copy of the information sheet for your own records. If you

decide to take part, you are still free to withdraw at any time up to the point of completion without any consequence.

What information will be collected? Initially we gather some demographic information from you such as age and gender. Then you will be asked questions referring to social anxiety, sleep, screen time, caffeine consumption, alcohol consumption and exercise

Will your participation in the study be kept confidential? Yes, all information that is collected about you during the course of the research will be kept confidential. All information will be encrypted and held securely on NCI PC or servers and will be accessed only by researchers on the project: David Tominiyi-Dunne. If data of a confidential nature is obtained during the research process, page 17 of NCI's data research policies will be highlighted to not use such information for their own personal advantage or theft of a third party

No information will be distributed to any other unauthorised individual or third party, only the research team. Your individual data cannot be made available to you due to the anonymous nature of this study. Should you wish to follow up on the results of this research please contact x22512296@student.ncirl.ie.

'It must be recognised that, in some circumstances, confidentiality of research data and records may be overridden by courts in the event of litigation or in the course of investigation by lawful authority. In such circumstances the University will take all reasonable steps within law to ensure that confidentiality is maintained to the greatest possible extent.'

What will happen to the information which you give? On completion of this research project, the data will be retained on the National College of Ireland server. Data, including all forms of primary research materials, must be recorded or retained in a durable and appropriately referenced form. Information should be held for a period of at least 5 years to protect the researcher and the college in case of allegations of falsification of data. As all the data collected will be electronic data will be reformatted or overwritten by the PI in National College of Ireland.

What will happen for dissemination? Data from the study will be published anonymously with information only being available to the study's researcher (David Tominiyi-Dunne) and a secondary data depository to assess validity and replication. To ensure the confidentiality of the information, passwords to the data will only be made available to the researcher and NCI representatives assessing validity and replication.

What will happen to the results? The research will be written up and presented as a report which will be presented in a scientific journal that will be made available internationally. Information that is displayed during the study will be deidentifiable.

What are the possible disadvantages of taking part? Some participants may find some questions distressing with questions relating to social anxiety and alcohol consumption such as 'have you ever experienced DT's (delerium tremens)- that is seen, felt, or heard things that aren't really there as a result of drinking?' . If this is the case, feel free to go to <https://www.betterhelp.com> to mental health and over related services or contact helpline@hse.ie, a drugs and alcohol helpline provided by the HSE.

What if there is a problem? If you experience any issues or problems while completing this study, you may contact me (x22512296@student.ncirl.ie). Similar to above if you find yourself distressed or needing support following completion of this survey please find the relevant supports here:

<https://www.betterhelp.com> or helpline@hse.ie

Any further queries? If you need any further information, you can contact me:

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If you agree to take part in the study, please complete and sign the consent form overleaf or click Yes in the Online Form.

Appendix B: Consent form

Thank you for taking the time to read this

Consent Form

- I agree to participate in David Tominiyi-Dunne's research study titled

The relationship between physiological factors and lifestyle choices on social anxiety.

- The purpose and nature of the study has been explained to me verbally & in writing. I've been able to ask questions, which were answered satisfactorily.

- I am participating voluntarily. I understand that I can withdraw from the study, without repercussions, at any time, whether that is

before it starts or while I am participating.

- The information sheet has made me aware of how my data will be managed.

- I am aware that I cannot access my individual results due to anonymity.

- I understand that my data, in an anonymous format, may be used in further research projects and any subsequent publications if I give permission below

- I agree for my data to be used for further research projects

- I do not agree for my data to be used for further research projects

Please tick the box to show that you have read and agree to these statements above ☐

I the undersigned have taken the time to fully explain to the above participant the nature and purpose of this study in a manner that they could understand. I have explained the risks involved as well as the possible benefits. I have invited them to ask questions on any aspect of the study that concerned them.

Researcher Name in block capitalsDAVID TOMINIYI- DUNNE.....

Appendix B: Debrief sheet

Thank you for participating in this study. The main purpose of the study is to investigate how physiological factors and lifestyle choices impact social anxiety. This was done by conducting a questionnaire that includes scales such as the Liebowitz Social Anxiety Scale, the Screen Time Questionnaire, Alcohol Dependence Scale, Motives of Caffeine Consumption Questionnaire, Sleep Quality Scale, and the International Physical Activity Questionnaire. Each scale provides statements and scenarios with you required to answer based on frequency, fear, avoidance, and duration depending on the variable being assessed. If you have found any of these questions distressing please feel free to go to <https://www.betterhelp.ie> or contact helpline@hse.ie. Betterhelp is a tool to find therapists near you. helpline@hse.ie provides a 24 hour service with people struggling with drug and alcohol use. You can also contact me if you have any questions at my student email: x22512296@student.ncirl.ie or with my lecturer fearghal.obrien@ncirl.ie

Appendix C: Demographic questions

1. What is your gender
2. What age are you?

Appendix D: Liebowittz Social Anxiety Scale

Responses- Fear (None, Mild, Moderate, Severe), Avoidance (Never, Occasionally, Often, Usually)

1. Telephoning in public
2. Participating in small groups
3. Eating in public places
4. Drinking with others in public places
5. Talking to people in authority
6. Acting, performing or giving a talk in front of an audience
7. Going to a party
8. Working while being observed
9. Writing while being observed
10. Calling someone you don't know well
11. Talking with people you don't know very well
12. Meeting strangers
13. Urinating in a public bathroom
14. Entering a room with others when everyone is already seated
15. Being the centre of attention
16. Speaking up at a meeting
17. Taking a test
18. Expressing a disagreement or disapproval to someone you don't know well
19. Looking at people you don't know very well in the eyes
20. Giving a report to a group
21. Trying to pick someone up
22. Returning goods to a store
23. Giving a party
24. Resisting a high pressure sales person

Appendix E: Sleep quality scale

Response scale- Rarely, Sometimes, Often, Almost Always

1. I have difficulty falling asleep
2. I fall into a deep sleep
3. I wake up while sleeping
4. I have difficulty getting back to sleep when I wake up in the middle of the night
5. I wake up easily because of noise
6. I toss and turn
7. I never go back to sleep after awakening during sleep
8. I feel refreshed after sleep
9. I feel unlikely to sleep after sleep
10. Poor sleep gives me headaches
11. Poor sleep gets me irritated

12. I would like to sleep more after waking up
13. My sleep hours are enough
14. Poor sleep makes me lose my appetite
15. Poor sleep makes it hard for me to think
16. I feel vigorous after sleep
17. Poor sleep makes me lose interest in work and others
18. My fatigue is relieved after sleep
19. Poor sleep causes me to make mistakes at work
20. I am satisfied with my sleep
21. Poor sleep makes me forget things more easily
22. Poor sleep makes it hard to concentrate at work
23. Sleepiness interferes with my daily life
24. Poor sleep makes me lose desire in all things
25. I have difficulty getting out of bed
26. Poor sleep makes me easily tired at work
27. I have a clear head after sleep
28. Poor sleep makes my life more painful

Appendix F: Scale for the Measurements of Attitudes towards Alcohol

Response scale- strongly agree, agree, neutral, disagree, strongly disagree

1. Drinking helps me to feel at ease within my group
2. I drink to ease relations with the opposite sex
3. I drink to be more talkative
4. I drink to feel more self-confident
5. Drinking alcohol helps me to overcome my shyness
6. I drink alcohol when I need to relax
7. I drink alcohol to deal with problems of despair
8. I sometimes drink when I am angry
9. I drink to escape from everyday problems
10. I drink when I am sad
11. When alcohol is free its 'stupid not to take advantage'
12. I consume less when I have to pay for every drink
13. Never turn down a free drink
14. When I am offered a free drink I accept it even if I don't feel like it
15. When I am offered several free drinks in one evening I drink more than usual

Appendix G: Motives of Caffeine Consumption Questionnaire

Response scale- strongly agree, agree, disagree, neutral, disagree, strongly disagree

1. It has become a ritual for me
2. It helps me when I'm tired
3. I like its taste
4. It helps me to concentrate
5. It reduces headaches
6. It improves my mood
7. Everyone on campus drinks it
8. It is a pleasant ritual
9. It peps me up
10. Drinking caffeinated beverages is important in social situations
11. It helps me to stay awake
12. My mood becomes better
13. I become refreshed
14. Drinking caffeinated beverages is a social event
15. It adds good atmosphere to conversation
16. It helps me to wake up
17. It is delicious
18. It stimulates me
19. It brings me together with other people
20. It invigorates me
21. It feels good during a conversation
22. I feel physically and mentally fitter
23. It is good for my blood pressure
24. I love the smell
25. It has become part of my everyday life
26. It makes me more motivated to work
27. It relieves tension
28. It calms me down
29. It is good to relax with a cup of a caffeinated beverage
30. It helps me digest
31. It hydrates me
32. Sometimes it feels good to be stimulated
33. It makes me feel that I am full of energy
34. I love the atmosphere associated with it

Appendix H: European Health Information Survey

1. When you are WORKING, which of the following best describes what you do?
2. In a typical week, how many days do you WALK for at least 10 minutes continuously in order to get to and from places?
3. How much time do you spend going to and from places on a typical day?

4. In a typical week, how many days do you bicycle for at least 10 minutes continuously to get to and from places?
5. How much time would you spend bicycling to get to and from places on a typical day
6. On a typical week, on how many days do you carry out sports, fitness and recreational (leisure) activities for at least 10 minutes continuously
7. How much time do you spend on sports, fitness and recreational (leisure) activities in a typical week
8. On a typical week, how many days do you carry out activities specifically designed to STRENGTHEN your muscles such as doing resistance training or strength exercises? Include all such activities even if you have mentioned them before.

Appendix I: G Power3.1.9.7

G power is the software that I used to calculate minimum sample size. It is a statistical analysis tool for a variety of statistical tests such as correlation and regression analysis. It also offers effect size calculations and graphic options.

Appendix J: Ethical approval sheet



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Website: www.nci.ie

Date: 22/11/2024

Ref: Ethics Approval Number: 22112024x22512296

Proposal Title: *The relationship between physiological factors and lifestyle choices on social anxiety*

Applicant: David Tominiyi-Dunne

Dear David,

Thank you for your application to the NCI Psychology Ethics Filter Committee, and for responding to clarification requests related to the application. I am pleased to inform you that the ethics committee has approved your application for your research project. Ethical approval will remain in place until the completion of your dissertation in part fulfilment of your BA Honours Degree in Psychology at NCI.

Please note that:

- Students are responsible for ensuring that their research is carried out in accordance with the information provided in their application.
- Students must abide by PSI ethics guidelines in completing their research.
- All procedures and materials should be approved by the supervisor prior to recruitment.
- Should substantial modifications to the research protocol be required at a later stage, a further amendment submission should be made.

Sincerely,

A handwritten signature in black ink, appearing to read "Robert Fox".

Dr Robert Fox

Chairperson, Psychology Ethics Filter Committee

Ethics Committee members: *Dr Robert Fox (representative on the NCI Research Ethics Subcommittee), Dr Michelle Kelly, Dr Amanda Kracen, Dr Conor Nolan, Dr Lynn Farrell, Dr Fearghal O'Brien, Dr David Mothersill, Dr Michele Kehoe, Dr Barry Coughlan, Dr Conor Thornberry, Dr Brendan Cullen, Cassandra Murphy, Eden Bryan.*

Appendix K: Poster for recruiting participants

Attention!

My name is David Tominiyi-Dunne and I'm currently studying B(A) Honours Psychology at the National College of Ireland. I'm currently doing a final year project on the relationship lifestyle choices and physiological factors have on social anxiety.

Your participation could help provide a very interesting study as we will observe what factors may correlate across our sample. Therefore, I'd like to encourage you to get involved in this study as this provides a great opportunity.



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