

APPLICATION FOR ETHICAL APPROVAL

RESEARCH STUDENTS

This form is to be completed by the student within **SIX** months for full-time students and **TWELVE** months for part time students, after the commencement of the research degree or following progression to Part Two of your course.

Once complete, submit this form via the **MyTSD Doctoral College Portal** at (<https://mytsd.uwtsd.ac.uk>).

This document is also available in Welsh.

RESEARCH STAFF ONLY

All communications relating to this application during its processing must be in writing and emailed to pgresearch@uwtsd.ac.uk, with the title 'Ethical Approval' followed by your name.

STUDENTS ON UNDERGRADUATE OR TAUGHT MASTERS PROGRAMMES should submit this form (and receive the outcome) via systems explained to you by the supervisor/module leader.

In order for research to result in benefit and minimise risk of harm, it must be conducted ethically. A researcher may not be covered by the University's insurance if ethical approval has not been obtained prior to commencement.

The University follows the OECD Frascati manual definition of **research activity**: "creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications". As such this covers activities undertaken by members of staff, postgraduate research students, and both taught postgraduate and undergraduate students working on dissertations/projects.

The individual undertaking the research activity is known as the "principal researcher".

Ethical approval is not required for routine audits, performance reviews, quality assurance studies, testing within normal educational requirements, and literary or artistic criticism.

Please read the notes for guidance before completing ALL sections of the form.

This form must be completed and approved prior to undertaking any research activity. Please see Checklist for details of process for different categories of application.

SECTION A: About You (Principal Researcher)

1	Full Name:	Aaron Young			
2	Tick all boxes that apply:	Member of staff:	☐	Honorary research fellow:	☐
	Undergraduate Student	☒	Taught Postgraduate Student	☐	Postgraduate Research Student
3	Institute/Academic Discipline/Centre:	University Wales Trinity Saint David – Yr Athrofa Education and Humanities – Psychology and Counselling			
4	Campus:	SA1 IQ Swansea			
5	E-mail address:	2205141@student.uwtsd.ac.uk			
6	Contact Telephone Number:				

For students:		
7	Student Number:	2205141
8	Programme of Study:	BSc Psychology and Counselling
9	Director of Studies/Supervisor:	Dr Kate Williams

SECTION B: Approval for Research Activity

1	Has the research activity received approval in principle? (please check the Guidance Notes as to the appropriate approval process for different levels of research by different categories of individual)	YES	☒	NO	☐
					Date
2	If Yes, please indicate source of approval (and date where known): Approval in principle must be obtained from the relevant source prior to seeking ethical approval	Research Degrees Committee	☐		
		Institute Research Committee	☐		
		Other (write in) Dr Kate Williams Dissertation Supervisor	☒	07/08/2024	

SECTION C: Internal and External Ethical Guidance Materials

Please list the core ethical guidance documents that have been referred to during the completion of this form (including any discipline-specific codes of research ethics, location-specific codes of research ethics, and also any specific ethical guidance relating to the proposed methodology). Please tick to confirm that your research proposal adheres to these codes and guidelines. You may add rows to this table if needed.	
1	UWTSD Research Ethics & Integrity Code of Practice ☒
2	UWTSD Research Data Management Policy ☒
3	UWTSD Data Protection and Storage Protocol ☒
4	BPS Code of Ethics and Conduct (December 2021) ☒
5	BPS Code of Human Research Ethics (April 2021) ☒
6	BPS Data Protection Regulation – Guidance for Researchers (December 2018) ☒

SECTION D: External Collaborative Research Activity

If there are external collaborators then you should gain consent from the contact persons to share their personal data with the university. If there are no external collaborators then leave this section blank and continue to section E.

1	Institution	N/A
2	Contact person name	
3	Contact person e-mail address	
4	Is your research externally funded?	YES ☐ NO ☒

5	Are you in receipt of a KESS scholarship?		YES	☐	NO	☒
6	Are you specifically employed to undertake this research in either a paid or voluntary capacity?	Voluntary	YES	☐	NO	☒
7		Employed	YES	☐	NO	☒
8	Is the research being undertaken within an existing UWTSD Athrofa Professional Learning Partnership (APLP)?	If YES then the permission question below does not need to be answered.	YES	☐	NO	☒
9	Has permission to undertake the research has been provided by the partner organisation?	(If YES attach copy) If NO the application cannot continue	YES	☐	NO	☒

Where research activity is carried out in collaboration with an external organisation

10	Does this organisation have its own ethics approval system?	YES	☐	NO	☒
If Yes, please attach a copy of any final approval (or interim approval) from the organisation (this may be a copy of an email if appropriate).					

SECTION E: Details of Research Activity

1	Indicative title:	Effect Of Chronotype and Time of Testing On Working Memory Task Performance In Students			
2	Proposed start date:	Oct/Nov 2024	Proposed end date:	20/05/2025	
Introduction to the Research (maximum 300 words per section) Ensure that you write for a <u>Non-Specialist Audience</u> when outlining your response to the points below: <i>Purpose of Research Activity</i> <i>Proposed Research Question</i> <i>Aims of Research Activity</i> <i>Objectives of Research Activity</i> Demonstrate, briefly, how <u>Existing Research</u> has informed the proposed activity and explain <i>What the research activity will add to the body of knowledge</i> <i>How it addresses an area of importance.</i>					
3	Purpose of Research Activity The purpose of this level six dissertation is to observe the synchronicity effect of chronotypes and testing times on working memory performance and if it improves when tested at a time congruent to a participant's cognitive peak. By extension, this will also test the appropriateness of the traditional 9 – 5 working/academic schedule, when peak performance of all individuals is desired. Recently, cognitive psychology has placed more attention on the importance of quality sleep and preferred waking hours on mental ability, thanks in large to Ronnenberg who has undertaken a research project which tracked the sleep of 50,000+ participants (Roenneberg, 2013). Roenneberg, though not the first to investigate this, used quantitative data to determine that everyone has their own unique CHRONOTYPE, a genetic predisposition that can determine fluctuations in cognitive abilities at different times of the day (Breus, 2016). Ronnenberg, with influence from previous morning/eveningness investigations (Horne & Ostberg, 1976), created three categories of chronotypes; Larks (morning preferred), Owls (Evening preferred) and Doves (neutral).				

	Other investigations within the field of sleep psychology have observed a “synchronicity effect”. This effect can be seen in numerous studies where a Lark typically performs better on a cognitive performance task when tested earlier in the day, and the same effect being observed when an Owl is tested in the evening (May, 1999; Natale & Lorenzetti, 1997). This implies that differing chronotypes also have differing cognitive “peak” times at which they perform best. This is supported by a meta-analysis of research on school children, which concluded that Morningness is more strongly associated with academic success due to the synchronicity of a young Lark’s cognitive peak matched to early school hours (Preckel et al., 2013). Reference List Breus, M. (2016). <i>The Power of When: Learn the best time to do everything</i>. Random House. Horne, J. A., & Ostberg, O. (1976). A self-assessment questionnaire to determine morningness-eveningness in human circadian rhythms. <i>International Journal of chronobiology</i>, 4(2), 97-110. May, C. P. (1999). Synchrony effects in cognition: The costs and a benefit. <i>Psychonomic Bulletin & Review</i>, 6(1), 142-147. Natale, V., & Lorenzetti, R. (1997). Influences of morningness-eveningness and time of day on narrative comprehension. <i>Personality and Individual differences</i>, 23(4), 685-690. Preckel, F., Lipnevich, A. A., Boehme, K., Brandner, L., Georgi, K., Könen, T., & Roberts, R. D. (2013). Morningness-eveningness and educational outcomes: The lark has an advantage over the owl at high school. <i>British Journal of Educational Psychology</i>, 83(1), 114-134. Roenneberg, T. (2013). The human sleep project. <i>Nature</i>, 498(7455), 427-428. (this box should expand as you type)
4	Research Question RQ1. Do “Owls” or “Larks” perform better on a working memory task? RQ2. Is performance on a working memory task dependent on an owl/lark’s congruent time of testing? (this box should expand as you type)
5	Aims of Research Activity This study will aim to examine if participants who are tested at a time congruent to their respective chronotypes perform better on a working memory task compared to those participants tested at a time incongruent to their chronotypes. By extension, this study will also examine if either “Owls” or “Larks” have superior working memory than the other when tested at different times throughout the day to determine a “peak” working memory time for each. The results of this investigation will have implications on the appropriateness of the traditional 9 – 5 working day when “peak” ability is of concern and also on academic performance, attendance and results for different student chronotypes who must attend lectures/exams at different times of the day that may put them at a disadvantage. (this box should expand as you type)
6	Objectives of Research Activity The objective of this study is to use existing measures of Morningness/eveningness and working memory tasks to explore interactions between Owl and Lark chronotypes and their performance on a working memory task when tested at a time that may be congruent or incongruent with themselves. This data will be analysed to determine if the synchronicity effect can be observed during tasks of moderate cognitive load and by extension determine if Owls or Lark performance is dependent on time of day and which is superior. These findings, if significant, could have implications for real-world work and academic schedules. (this box should expand as you type)

	Proposed methods (maximum 600 words) Provide a brief summary of all the methods that may be used in the research activity, making it clear what specific techniques may be used. If methods other than those listed in this section are deemed appropriate later, additional ethical approval for those methods will be needed. You do not need to justify the methods here, but should instead describe how you intend to collect the data necessary for you to complete your project.
7	Participant Recruitment This study will involve the testing of students on a psychology-related course at UWTSD within a controlled lab environment on the university campus. The study will aim to recruit approximately 60 participants aged 18+ who must have normal or corrected to normal vision. Recruitment will take place via the UWTSD Psychology Department's Experimental Management System (EMS) in exchange for two-course credits (20 minutes participation time). Eligible students can volunteer to take part either between 9am – 12pm (morning test group) or 2pm – 5pm (afternoon test group). The participants will only be identifiable to the researcher by their unique EMS identification code. Participants will receive a printed information sheet that will include relevant information such as the predicted length of the experiment, the basic purpose, contact details of the researcher and supervisor and the different phases that are involved. Participants will then sign a consent form highlighting their rights during the study and if they wish to proceed. Data Collection and Materials Depending on what time is chosen through EMS, participants will be assigned to either the morning test group or the afternoon test group. However, participants will not be made aware that this is a factor. Participants will begin on a university laptop by filling out the 19-item Morning/Eveningness Questionnaire (MEQ) as taken from Horne and Östberg (1976). The results of which will identify each participant as either a Lark or an Owl, although participants will not be made aware of this. Concluding this, participants will be directed toward the SuperLab computer with a pre-loaded task waiting. This task will be a modified version of the Brown-Peterson working memory task. It will require participants to memorise sets of three-letter Trigrams while also navigating a fast-paced numerical distractor task of moderate cognitive load. This distractor task will require participants to identify an ODD or EVEN number from a set (designed to prevent rehearsal) before being prompted to recall the Trigram (a complete description of this task can be found in SECTION F). Each trial of this task will get progressively more difficult, and data will be collected on the furthest trial a participant can achieve before making a set number of mistakes. After the conclusion of the study, an on-screen message will prompt the participants to inform the researcher that the study has finished. The researcher will then debrief the participant and provide a debrief sheet highlighting the purpose of the study and providing an opportunity to ask questions before the participant is thanked for their participation and asked to leave. Design, Data, and Analysis The study will employ a 2x2 between-subjects quantitative experimental design with two main effect IV's, these being time groups (morning or afternoon tested) and chronotype group (Lark or Owl). As such, analysis will involve creating four conditions: 1) Congruently tested Lark, 2) Incongruently tested Lark, 3) Congruently tested Owl and 4) Incongruently tested Owl. The DV of participant score on the memory task will be used to analyse, through a 2x2 between-subjects ANOVA, which condition performs best. (this box should expand as you type)
	Location of research activity Identify all locations where research activity will take place.
8	All research activities featured in this investigation will take place in the 2nd floor Psychology Labs at UWTSD SA1 (IQ) campus. (this box should expand as you type)
	Research activity outside of the UK

	If research activity will take place overseas, you are responsible for ensuring that local ethical considerations are complied with and that the relevant permissions are sought. Specify any local guidelines (e.g. from local professional associations/learned societies/universities) that exist and whether these involve any ethical stipulations beyond those usual in the UK (provide details of any licenses or permissions required). Also specify whether there are any specific ethical issues raised by the local context in which the research activity is taking place, for example, particular cultural and/or legal sensitivities or vulnerabilities of participants. If you live in the country where you will do the research then please state this.
9	N/A <i>(this box should expand as you type)</i>

10	Use of documentation not in the public domain: Are any documents NOT publicly available?	NO	☒
		YES	☐
11	If Yes, please provide details here of how you will gain access to specific documentation that is not in the public domain and that this is in accordance with the current data protection law of the country in question and that of England and Wales. <i>(this box should expand as you type)</i>		

	Does your research relate to one or more of the seven aims of the Well-being of Future Generations (Wales) Act 2015?	YES	NO
12	A prosperous Wales	☐	☒
13	A resilient Wales	☐	☒
14	A healthier Wales	☒	☐
15	A more equal Wales	☐	☒
16	A Wales of cohesive communities	☐	☒
17	A Wales of vibrant culture and thriving Welsh language	☐	☒
18	A globally responsible Wales	☐	☒
19	If YES to any of the above, please give details: This investigation will highlight the importance of quality and appropriate sleep on the mental ability of individuals and bring awareness to the best times of day for people with different sleep patterns to focus on specific cognitive tasks. <i>(this box should expand as you type)</i>		

SECTION F: Scope of Research Activity

	Will the research activity include:	YES	NO
1	Use of a questionnaire or similar research instrument?	☒	☐
2	Use of interviews?	☐	☒
3	Use of focus groups?	☐	☒

4	Use of participant diaries?	☐	☒
5	Use of video or audio recording?	☐	☒
6	Use of computer-generated log files?	☒	☐
7	Participant observation with their knowledge?	☐	☒
8	Participant observation without their knowledge?	☐	☒
9	Access to personal or confidential information without the participants' specific consent?	☐	☒
10	Administration of any questions, test stimuli, presentation that may be experienced as physically, mentally or emotionally harmful / offensive?	☐	☒
11	Performance of any acts which may cause embarrassment or affect self-esteem?	☐	☒
12	Investigation of participants involved in illegal activities?	☐	☒
13	Use of procedures that involve deception?	☒	☐
14	Administration of any substance, agent or placebo?	☐	☒
15	Working with live vertebrate animals?	☐	☒
16	Procedures that may have a negative impact on the environment?	☐	☒
17	Other primary data collection methods. Please indicate the type of data collection method(s) below.		
	Details of any other primary data collection method: This study will use a version of the Brown-Peterson memory task as adapted from Brown (1958) and Peterson and Peterson (1959). This task will be constructed using SuperLab by the lead researcher and will involve the participant progressing through a set of trials requiring them to memorise a new three-letter trigram for each trial (e.g., GSF). Participants will be instructed to memorise these trigrams while also completing a distractor task involving identifying either an EVEN or ODD number from a set. Correct/incorrect answers on the distractor task are irrelevant, and only allow for a set number of seconds of non-rehearsal to pass before the participant is asked to recall the trigram (trial 1 is 6 seconds, trial 2 is 9 seconds, trial 3 is 12 seconds, etc.). Data will be collected on the furthest trial they manage to correctly recall before making a set number of mistakes, as after this set number of mistakes the experiment will be terminated. There is a total of 12 trials and sets of trigrams. However, participants are not predicted to progress this far due to the distractor tasks gradually increasing in difficulty. (this box should expand as you type)	☒	☐

If NO to every question, then the research activity is (ethically) low risk and **may** be exempt from **some** of the following sections (please refer to Guidance Notes).

If YES to any question, then no research activity should be undertaken until full ethical approval has been obtained.

SECTION G: Intended Participants

If there are no participants then do not complete this section, but go directly to section H.

Who are the intended participants:		
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		YES	NO
1	Students or staff at the University?	☒	☐
2	Adults (over the age of 18 and competent to give consent)?	☒	☐
3	Vulnerable adults?	☐	☒
4	Children and Young People under the age of 18? (Consent from Parent, Carer or Guardian will be required)	☐	☒
5	Prisoners?	☐	☒
6	Young offenders?	☐	☒
7	Those who could be considered to have a particularly dependent relationship with the investigator or a gatekeeper?	☐	☒
8	People engaged in illegal activities?	☐	☒
9	Others. Please indicate the participants below, and specifically any group who may be unable to give consent.		
	Details of any other participant groups: (this box should expand as you type)	☐	☒

Participant numbers and source Provide an estimate of the expected number of participants. How will you identify participants and how will they be recruited?		
10	How many participants are expected?	Based on the study design with 4 study conditions, approximately 60 participants are required (15 per condition for between-subjects design). (this box should expand as you type)
11	Who will the participants be?	University Students at UWTSD, 18+ yrs from the Psychology and Counselling department (normal or corrected to normal vision) (this box should expand as you type)
12	How will you identify the participants?	All participants will be recruited from UWTSD Psychology and counselling programs. These volunteer participants will be recruited via the psychology department Experimental Management System (EMS) in exchange for course credits. Participants will be identified when they arrive at the lab using their unique EMS ID code. A different unique ID code will then be assigned to their data. (this box should expand as you type)

Information for participants:		YES	NO	N/A
13	Will you describe the main research procedures to participants in advance, so that they are informed about what to expect?	☒	☐	☐
14	Will you tell participants that their participation is voluntary?	☒	☐	☐
15	Will you obtain written consent for participation?	☒	☐	☐

16	Will you explain to participants that refusal to participate in the research will not affect their treatment or education (if relevant)?	☒	☐	☐
17	If the research is observational, will you ask participants for their consent to being observed?	☐	☐	☒
18	Will you tell participants that they may withdraw from the research at any time and for any reason?	☒	☐	☐
19	With questionnaires, will you give participants the option of omitting questions they do not want to answer?	☒	☐	☐
20	Will you tell participants that their data will be treated with full confidentiality and that, if published, it will not be identifiable as theirs?	☒	☐	☐
21	Will you debrief participants at the end of their participation, in a way appropriate to the type of research undertaken?	☒	☐	☐
22	If NO to any of above questions, please give an explanation			
Participants in the labs will not be observed as part of the study. <i>(this box should expand as you type)</i>				

	Information for participants:	YES	NO	N/A
24	Will participants be paid?	☐	☒	☐
25	Is specialist electrical or other equipment to be used with participants?	☐	☒	☐
26	Are there any financial or other interests to the investigator or University arising from this study?	☐	☒	☐
27	Will the research activity involve deliberately misleading participants in any way, or the partial or full concealment of the specific study aims?	☒	☐	☐
28	If YES to any question, please provide full details			
Participants will not be initially aware that their scores on the MEQ will be categorising them as either Lark or Owl. Additionally, participants won't be aware that their answers on the distractor tasks are irrelevant or that the time of testing is a relevant factor in the investigation (partial concealment of information). The debrief sheet will make this information clear and conformation will be sought that they are still happy to have their data included. <i>(this box should expand as you type)</i>				

SECTION H: Anticipated Risks

Outline any anticipated risks that may adversely affect any of the participants, the researchers and/or the University, and the steps that will be taken to address them. If you have completed a full risk assessment (for example as required by a laboratory, or external research collaborator) you may append that to this form.					
1	Full risk assessment completed and appended? <table border="1"> <tr> <td>Yes</td> <td>☐</td> </tr> <tr> <td>No</td> <td>☒</td> </tr> </table>	Yes	☐	No	☒
Yes	☐				
No	☒				
2	Risks to participants For example: sector-specific health & safety, emotional distress, financial disclosure, physical harm, transfer of personal data, sensitive organisational information				
	<table border="1"> <tr> <td> Risk to participants: 1. The memory task used in this experiment is fast-paced and challenging by design so may cause frustration or distress when participating </td> <td> How you will mitigate the risk to participants: 1. Under UWTSD and BPS research guidelines, participants will be informed of the nature of the memory task before participation, and comprehensive instructions and well as two practice trials </td> </tr> </table>	Risk to participants: 1. The memory task used in this experiment is fast-paced and challenging by design so may cause frustration or distress when participating	How you will mitigate the risk to participants: 1. Under UWTSD and BPS research guidelines, participants will be informed of the nature of the memory task before participation, and comprehensive instructions and well as two practice trials		
Risk to participants: 1. The memory task used in this experiment is fast-paced and challenging by design so may cause frustration or distress when participating	How you will mitigate the risk to participants: 1. Under UWTSD and BPS research guidelines, participants will be informed of the nature of the memory task before participation, and comprehensive instructions and well as two practice trials				

	2. Some questions on the MEQ ask participants about their sleeping patterns as well as their mood and behaviour concerning sleep timing. Some participants could potentially suffer from sleeping disorders and so may feel distressed or judged by the questions 3. Risks related to participants anonymity, confidentiality and data protection rights	will also be included. Participants will also be informed of their right to withdraw at any point without penalty if they do not wish to continue. 2. As above, participants will be informed of the nature of the questionnaire prior to commencing and their right to withdraw during the study, and informed that they do not have to answer every question and may skip over any they wish. 3. Participants will be made aware that any data collected will be anonymous and confidentially handled by the researcher who will assign unique ID codes to each data set that cannot be used for identification. Data will be stored on a password and encryption-protected university computer and OneDrive account with data only being used for intended research purposes. <i>(this box should expand as you type)</i>
3	If research activity may include sensitive, embarrassing or upsetting topics (e.g. sexual activity, drug use) or issues likely to disclose information requiring further action (e.g. criminal activity), give details of the procedures to deal with these issues, including any support/advice (e.g. helpline numbers) to be offered to participants. Note that where applicable, consent procedures should make it clear that if something potentially or actually illegal is discovered in the course of a project, it may need to be disclosed to the proper authorities	
	N/A <i>(this box should expand as you type)</i>	
4	Risks to the investigator For example: personal health & safety, physical harm, emotional distress, risk of accusation of harm/impropriety, conflict of interest	
	Risk to the investigator: 1. The researcher's email will be attached to information and debrief sheets and so may receive unwanted emails from participants 2. The student researcher may be asked questions to which they do not know the immediate answer 3. Potential risk of participants accusing the researchers of harm/impropriety if they are not happy with the study. 4. Researcher's physical safety in the labs may also be at risk if the participant is dissatisfied with the MEQ or Memory task <i>(this box should expand as you type)</i>	How you will mitigate the risk to the investigator: 1. Only the researcher student's email will be included as part of the research and any inappropriate emails will be reported to the module lead/supervisor immediately. 2. Any queries that the researcher cannot answer will be passed on to the research supervisor, additionally, if participants have lingering questions they can email the researcher for clarification in the future. 3. It will be ensured that the student researcher will follow all the UWTSD and BPS codes of conduct and research guidelines. Additionally, the study will not go forward until all requirements have been met and approved by the supervisor. 4. If a participant begins to get agitated and the researcher's safety feels threatened, then the study will come to an end and the researcher will remove themselves and report the incident to the lab manager.

		Additionally, research will only take place during open university hours from Monday-Friday 9am – 5pm. <i>(this box should expand as you type)</i>
5	University/institutional risks For example: adverse publicity, financial loss, data protection	
	Risk to the University: 1. Adverse Publicity for the university could occur if researchers do not adhere to codes of research ethics. 2. Data leaks and exposures or data could be used for alternative purposes. <i>(this box should expand as you type)</i>	How you will mitigate the risk to the University: 1. The University Ethics and Integrity Code of Practice and the BPS Code of Ethics and Conduct will be closely adhered to throughout the whole empirical project process to minimise risks to the institution and professionalism will be maintained. 2. The data collected will be stored following UWTSD Research Data Management (RDM) rules and only used for the intended purpose. All questionnaire data will be stored securely through password protected Qualtrics software, and SuperLab data will be stored on password protected university lab and researcher OneDrive account. <i>(this box should expand as you type)</i>
6	Environmental risks For example: accidental spillage of pollutants, damage to local ecosystems	
	Risk to the environment: N/A <i>(this box should expand as you type)</i>	How you will mitigate the risk to environment: N/A <i>(this box should expand as you type)</i>

Disclosure and Barring Service				
	If the research activity involves children or vulnerable adults, a Disclosure and Barring Service (DBS) certificate must be obtained before any contact with such participants.	YES	NO	N/A
7	Does your research require you to hold a current DBS Certificate?	☐	☒	☐
8	If YES, please give the certificate number. If the certificate number is not available please write "Pending"; in this case any ethical approval will be subject to providing the appropriate certificate number.			

SECTION I: Feedback, Consent and Confidentiality

1	Feedback What de-briefing and feedback will be provided to participants, how will this be done and when?
	At the conclusion of the experiment, the researcher will provide a verbal debrief and a printed debrief form. Participants will be provided with further information about the research including the full purpose and aims of the experiment and will also be given a final chance to withdraw their data. On this debrief form will also be the student researcher email and supervisor email if the participant wishes to ask further questions or provide feedback on the study. Participants will be free to take the debrief form away with them. Participants will be reminded that if they wish to withdraw their data they must do so before leaving the lab as after this point their data will be anonymous and not possible to trace back to them.

	(this box should expand as you type)
2	Informed consent Describe the arrangements to inform potential participants, before providing consent, of what is involved in participating. Describe the arrangements for participants to provide full consent before data collection begins. If gaining consent in this way is inappropriate, explain how consent will be obtained and recorded in accordance with prevailing data protection legislation. A printed consent form will be provided to the participant before the start of data collection. This consent form will include essential information regarding the experiment that participants will be required to read and sign before beginning. The consent form will also outline both tasks featured in the study as well as state the ethical rights and ensure participants that data will remain confidential and anonymous. (this box should expand as you type)
3	Confidentiality / Anonymity Set out how the anonymity of participants and confidentiality will be ensured in any outputs. If anonymity is not being offered, explain why this is the case. As per the BPS Code of Ethics and Conduct, all participant information and data will remain completely anonymous throughout the empirical project study. Participants will sign up to the study using their unique EMS identification number. Their data will then be given a different new unique ID code (i.e. M1, E1) to prevent data from being related to any specific participant. Any data collected will not be able to be traced back to the individual. Only gender and age will be collected for descriptive statistics. All participant responses will be kept confidential, and consent forms that will contain the participant's name will be stored separately from the study data. Consent forms will be stored securely within a secure locked cabinet in the psychology labs. Any electronic data will be protected by a password on lab computers and researcher university OneDrive accounts. (this box should expand as you type)

SECTION J: Data Protection and Storage

	Does the research activity involve personal data (as defined by the General Data Protection Regulation 2016 "GDPR" and the Data Protection Act 2018 "DPA")?	YES	NO
1	"Personal data" means any information relating to an identified or identifiable natural person ('data subject'). An identifiable natural person is one who can be identified, directly or indirectly, in particular by reference to an identifier such as a name, an identification number, location data, an online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that natural person. Any video or audio recordings of participants is considered to be personal data.	☒	☐
	If YES, provide a description of the data and explain why this data needs to be collected:		
2	At the start of the study, data regarding participants' age and gender will be collected for the purpose of descriptive statistics. This data will be used to calculate the mean age score of participants and observe the gender split of the participant sample as part of the standard reporting measures in psychology research. Participant names collected on consent forms will be stored separately to study data and kept secure in a locked cabinet in the psychology labs. (this box should expand as you type)		
	Does it involve special category data (as defined by the GDPR)?	YES	NO

3	“Special category data” means sensitive personal data consisting of information as to the data subjects’ – (a) racial or ethnic origin, (b) political opinions, (c) religious beliefs or other beliefs of a similar nature, (d) membership of a trade union (within the meaning of the Trade Union and Labour Relations (Consolidation) Act 1992), (e) physical or mental health or condition, (f) sexual life, (g) genetics, (h) biometric data (as used for ID purposes),	☐	☒
If YES, provide a description of the special category data and explain why this data needs to be collected:			
4	N/A (this box should expand as you type)		

	Will data from the research activity (collected data, drafts of the thesis, or materials for publication) be stored in any of the following ways?	YES	NO
5	Manual files (i.e. in paper form)?	☒	☐
6	University computers?	☒	☐
7	Private company computers?	☐	☒
8	Home or other personal computers?	☐	☒
9	Laptop computers/ CDs/ Portable disk-drives/ memory sticks?	☒	☐
10	“Cloud” storage or websites?	☒	☐
11	Other – specify:	☐	☒
12	For all stored data, explain the measures in place to ensure the security of the data collected, data confidentiality, including details of backup procedures, password protection, encryption, anonymisation and pseudonymisation: Paper consent forms will be stored separately to study data and kept secure in a locked cabinet in the psychology labs. University computers will be used to collect SuperLab data in the labs, this will be password-protected and located within the secure key card access lab environment. Encrypted memory sticks will be used to transfer anonymised data from the lab computers to the researcher's university OneDrive (if relevant). Once this transfer is complete then data will be deleted from the memory stick. Data collected in Qualtrics will be stored in the researcher's password-protected Qualtrics account that can be accessed through the cloud. Any raw data collected will be stored electronically. Data collected and stored through Superlab university computer will only be accessible to the researcher through a password-protected university account. Data collected through Qualtrics and SuperLabs can only be linked using participant ID codes. (this box should expand as you type)		

Data Protection			
	Will the research activity involve any of the following activities:	YES	NO

13	Electronic transfer of data in any form?	☒	☐
14	Sharing of data with others at the University outside of the immediate research team?	☐	☒
15	Sharing of data with other organisations?	☐	☒
16	Export of data outside the UK or importing of data from outside the UK?	☐	☒
17	Use of personal addresses, postcodes, faxes, emails or telephone numbers?	☐	☒
18	Publication of data that might allow identification of individuals?	☐	☒
19	Use of data management system?	☒	☐
20	Data archiving?	☐	☒
21	If YES to any question, please provide full details, explaining how this will be conducted in accordance with the GDPR and Data Protection Act (2018) (and any international equivalents, where appropriate):		
	Experimental data for this study will be collected using a SuperLab computer located in the UWTSD SA1 (IQ) campus psychology labs, this data will be anonymous and transferred to the researcher's password-protected university OneDrive using an encrypted memory stick after which data from the stick will be deleted. Questionnaire data will be collected using password protected Qualtrics software and will be anonymous and downloaded onto the researcher's secure and password-protected university OneDrive. <i>(this box should expand as you type)</i>		
22	List all who will have access to the data generated by the research activity:		
	Aaron Young (2205141) (Lead Researcher) Dr Kate Williams (Supervisor) Examiners may also request access to data <i>(this box should expand as you type)</i>		
23	List who will have control of, and act as custodian(s) for, data generated by the research activity:		
	Aaron Young (2205141) <i>(this box should expand as you type)</i>		
24	Give details of data storage arrangements, including security measures in place to protect the data, where data will be stored, how long for, and in what form. Will data be archived – if so how and if not why not.		
	Data collected on both SuperLab and Qualtrics will be stored in an anonymous format and password protected. Qualtrics data will only be accessible by the researcher through a password-protected account Qualtrics account. SuperLab data will be stored on a university lab computer behind the researcher's password-protected university account. All anonymised data transferred between university devices and the researcher's university OneDrive account will be done using an encrypted memory stick and will be wiped after the transfer, this data will then remain secure in a password-protected file on the researcher's university OneDrive account. Data will be stored until the report for the Psychological Empirical project has been confirmed by external examiners, after which data will be deleted. All data storage will conform to the UWTSD Research Data Management Policy. <i>(this box should expand as you type)</i>		
25	Please indicate if your data will be stored in the UWTSD Research Data Repository (see https://researchdata.uwtsd.ac.uk/). If so please explain. <i>(Most relevant to academic staff)</i>		

	Any data gathered during this study will not be stored in the UWTSD Research Data Repository at this point and will not be held after the conclusion of the empirical project. <i>(this box should expand as you type)</i>		
26	Confirm that you have read the UWTSD guidance on data management (see https://www.uwtsd.ac.uk/library/research-data-management/)	YES	☒
27	Confirm that you are aware that you need to keep all data until after your research has completed or the end of your funding	YES	☒

SECTION K: Declaration

	The information which I have provided is correct and complete to the best of my knowledge. I have attempted to identify any risks and issues related to the research activity and acknowledge my obligations and the rights of the participants. In submitting this application I hereby confirm that I undertake to ensure that the above named research activity will meet the University's Research Ethics and Integrity Code of Practice which is published on the website: https://www.uwtsd.ac.uk/research/research-ethics/		
1	Signature of applicant:	AARON YOUNG	Date: 25/09/2024

For STUDENT Submissions:

2	Director of Studies/Supervisor:	Dr Kate Williams	Date: 07/10/2024
3	Signature:	<i>K. E. Williams</i>	

For STAFF Submissions:

4	Academic Director/ Assistant Dean:		Date:
5	Signature:		

Checklist: Please complete the checklist below to ensure that you have completed the form according to the guidelines and attached any required documentation:

☒	I have read the guidance notes supplied before completing the form.
☒	I have completed ALL RELEVANT sections of the form in full.
☒	I confirm that the research activity has received approval in principle
☐	I have attached a copy of final/interim approval from external organisation (where appropriate)
☐	I have attached a full risk assessment (where appropriate) ONLY TICK IF YOU HAVE ATTACHED A FULL RISK ASSESSMENT
☒	I understand that it is my responsibility to ensure that the above named research activity will meet the University's Research Ethics and Integrity Code of Practice.
☒	I understand that before commencing data collection all documents aimed at respondents (including information sheets, consent forms, questionnaires, interview schedules etc.) must be confirmed by the DoS/Supervisor, module tutor or Academic Director.

RESEARCH STUDENTS ONLY

Once complete, submit this form via the **MyTSD Doctoral College Portal** at (<https://mytsd.uwtsd.ac.uk>).

RESEARCH STAFF ONLY

All communications relating to this application during its processing must be in writing and emailed to pgresearch@uwtsd.ac.uk, with the title 'Ethical Approval' followed by your name.

STUDENTS ON UNDERGRADUATE OR TAUGHT MASTERS PROGRAMMES should submit this form (and receive the outcome) via systems explained to you by the supervisor/module leader.

Participant Information Sheet

Title of Study: Effect of Chronotype and Time of Testing on Memory Task Performance in Students

Research Team: Student Researcher: Aaron Young (2205141@student.uwtsd.ac.uk) and Supervisor: Dr Kate Williams (kate.williams@uwtsd.ac.uk)

Date:

Invitation Paragraph:

You are being invited to take part in a research project being conducted by a third-year student within the Psychology and Counselling department at The University of Wales Trinity Saint David (UWTSD) for their Psychology Empirical Project. Before you decide to take part, it is important for you to understand why the research is being conducted and what participation will involve.

Please take time to read the following information carefully and discuss it with the researcher if you wish. Ask if there is anything unclear or if you want more information. Take time to decide whether you wish to take part. Thank you for reading this.

Purpose of Research:

The purpose of this study is to explore how performance on a working memory task may vary between individuals with differing preferred natural waking and sleeping times (circadian rhythms) and if memory performance is affected by the time of testing for these different rhythms.

What does taking part involve:

This study will involve an in-person experimental lab-based task. During this study you will be required to do the following:

- Provide demographic information of age and gender.
- Complete a 19-item questionnaire regarding sleeping and waking habits.
- Complete a computer-based memory task lasting several minutes and will involve memorising and recalling three-letter trigrams (e.g., MFG) while also engaging in a simple numerical task identifying Odd or Even numbers.

At the end of the study, you will be debriefed by the researcher, and you will be provided with the study debrief sheet.

How long will the study take:

This study is expected to take around 20 minutes to complete. If you have signed-up via the Experiment Management System (EMS), you can expect to receive 2 credits.

Benefits of participating:

Whilst there are no immediate benefits for those people participating in the study, it is hoped that this work will contribute to the existing body of knowledge on the areas of sleep and short-term memory retention.

Risks of participating:

There are no immediate risks to participation in this study. However, you may feel frustrated completing the sleeping and waking habits questionnaire, particularly if you experience a sleep disorder, such as narcolepsy. Any issues regarding this should be discussed with the researcher prior to commencing the study. You can also leave any questions you do not wish to answer blank, and you can withdraw from the study at any time during the study without a reason and without penalty. Also, if you feel you would be uncomfortable engaging in a face paced memory task involving distractions, you are advised not to take part in this study, or if you do commence with this task but feel it becomes too overwhelming, again you can withdraw from the task without reason and without penalty.

Participation and withdrawal:

Participation in this study is completely voluntary and you also have the option of not answering any questions you do not feel comfortable answering. You can withdraw at any point during the study without penalty. If you wish to withdraw during the study, please inform the researcher. You do not need to give a reason for withdrawing. However, please note, once you leave the lab environment, it will not be possible to withdraw your data, as it will be anonymous.

How will your data be used and processed:

Your data will only be used for the purpose of the research activity. Your name will only be collected on the consent form and consent forms will not be related to study data. This study will also collect demographic data of age and gender. This is for the purpose of descriptive statistics, which form the standard reporting measures in psychology. Once descriptive the data is collected, it will be aggregated for presentation purposes by calculating the mean age and total gender numbers. This data will also not be linked to your name. The researcher will not disclose any data information or use it for any other purposes.

How will your data be collected and stored:

All collected raw data will be kept in a raw format and then aggregated for analysis purposes. Computer data will be collected via SuperLab, and this data will be stored on the SuperLab computer within the Psychology labs. It will only be accessed by the researcher through a password protected university account. All SuperLab data will be anonymous and copied from the lab computer to the researcher's university OneDrive account, which will also be protected with password. If there would be a need to transfer data by a memory stick, the memory stick will be encrypted, and the data will be deleted once transfer is completed. Questionnaire data collected via Qualtrics will be stored in the researcher's password protected Qualtrics account. Data collected through Qualtrics will be anonymous, and this anonymous data will be downloaded from Qualtrics for analysis purposes to the researcher's password protected university OneDrive account. Physical consent forms will be preserved in a securely locked filing cabinet located in the Psychology Labs and separate from the anonymised electronic data. The research data will be subsequently deleted after the module assessment undergoes evaluation by the end of year examination board.

How can you contact the researchers if you have any questions:

You can contact the research student via email: Aaron Young -(2205141@student.uwtsd.ac.uk)

You can also contact the research supervisor via email: Dr Kate Williams –
kate.williams@uwtsd.ac.uk

If you have any immediate questions, please ask the researcher now. If you are happy to continue, please read, complete, and sign the corresponding consent form.

Participant Consent Form

Title of Study: Effect of Chronotype and Time of Testing on Memory Task Performance In Students

Research Team: Student Researcher: Aaron Young (2205141@student.uwtsd.ac.uk) and Supervisor: Dr Kate Williams (kate.williams@uwtsd.ac.uk)

Date:

1. I confirm that I have read and understand the Information Sheet for the above study.	Yes	No
2. I had an opportunity to ask questions and have them answered satisfactorily.	Yes	No
3. I understand that I may ask further questions at any time.	Yes	No
4. I understand that my participation is voluntary, and I am free to withdraw at any time during the study without penalty or giving any reason.	Yes	No
5. I understand that my fully anonymised data will be utilised for only this research study, which is being conducted by a third-year Psychology student for the purpose of their undergraduate Psychology Empirical project and will be deleted once external examiner approval for the project has been obtained.	Yes	No
6. I have been informed that if I feel I would be uncomfortable answering personal questions, completing a questionnaire relating to sleeping habits and completing a short computer-based task memorising trigrams and identifying odd/even numbers, that I should not take part in this study.	Yes	No
7. I understand that I may decline to answer any questions.	Yes	No
8. I understand that any data collected will be anonymised and stored in an anonymous format and once I leave the lab it will not be possible to trace the data back to me to withdraw.	Yes	No
9. I understand that the anonymised data provided will be securely stored and accessible only to the members of the research team directly involved in the study, and that confidentiality will be maintained.	Yes	No
10. I confirm that I am over 18 years old	Yes	No

11. I confirm I have normal or corrected-to-normal vision	Yes	No
12. I agree to take part in the above study.	Yes	No

Participant Name Date Participant Signature

Researcher Name Date Researcher Signature

There should be two signed copies, one for the participant, one retained by researcher for records.

Study Debrief Sheet

Title of Study: Effect of Chronotype and Time of Testing on Memory Task Performance In Students

Research Team: Student Researcher: Aaron Young (2205141@student.uwtsd.ac.uk) and Supervisor: Dr Kate Williams (kate.williams@uwtsd.ac.uk)

Thank you for your participation in this research study.

This study seeks to simulate environments in which students must acquire, process, rehearse and recall often fast-paced information at varying (usually early) times of the day.

This investigation aims to explore how students and workers must often perform at their best during times that may not match their cognitive peaks, which are often defined by our preferred sleep/wake cycles (Chronotypes). For example, students must engage in lectures and exams at different times which may be detrimental to their performance and many full-time workers are expected to conform to the typical 9 – 5 working schedule which may not be appropriate for all individuals.

Through conducting a controlled laboratory study, we aimed to isolate specific variables to effectively explore the research questions; 1) Do “Owls” (evening chronotype) or “Larks” (morning chronotype) perform better on a working memory task? and 2) Is performance on a working memory task dependent on an owl/lark’s congruent time of testing?

Depending on the time you participated, you were either assigned to the morning group (9 – 12am) or afternoon group (2 – 5pm). Furthermore, your answers on the sleep/wake questionnaire will assign you to either a morning-preferred group (Larks) or evening preferred group (Owls). Therefore, we had to use slight deception in this study to accurately assess these variables on working memory performance.

Your data will remain confidential and in an anonymous format. If you wish to withdraw your data you must do so before leaving the lab, as once you leave it will not be possible to trace back to you.

If you have any further questions, please contact the researcher Aaron Young at 2205141@student.uwtsd.ac.uk or the academic supervisor Dr Kate Williams at kate.williams@uwtsd.ac.uk.

Thank you again for your contribution.

Aaron Young - BSc Psychology and Counselling Studies.

Adapted Morning Eveningness Questionnaire (MEQ)

A self-assessment questionnaire to determine Morningness-Eveningness in human circadian rhythms - Horne & Östberg, 1976.

1. What time would you get up if you were entirely free to plan your day?
 - ☐ 5 am – 6:30 am
 - ☐ 6:30 am - 7:45 am
 - ☐ 7:45 am – 9:45 am
 - ☐ 9:45 am – 11 am
 - ☐ 11 am – 12 pm
 - ☐ 12 pm onward
2. What time would you go to bed if you were entirely free to plan your evening?
 - ☐ 8 pm – 9 pm
 - ☐ 9 pm – 10:15 pm
 - ☐ 10:15 pm – 12:30 am
 - ☐ 12:30 am – 1:45 am
 - ☐ 1:45 am – 3 am onward
3. If there is a specific time at which you must get up in the morning, to what extent are you dependent on being woken up by an alarm clock?
 - ☐ Not at all dependent
 - ☐ Slightly dependent
 - ☐ Fairly dependent
 - ☐ Very dependent
4. How easy do you find getting up in the mornings? **(when you are not woken up unexpectedly)?**
 - ☐ Not at all easy
 - ☐ Not very easy
 - ☐ Fairly easy
 - ☐ Very easy
5. How alert do you feel during the first half hour after having woken in the mornings?
 - ☐ Not at all alert
 - ☐ Slightly alert
 - ☐ Fairly alert
 - ☐ Very alert
6. How is your appetite during the first half-hour after waking in the mornings?
 - ☐ Very poor
 - ☐ Fairly poor
 - ☐ Fairly good
 - ☐ Very good
7. How tired do you feel during the first half-hour after waking in the morning?
 - ☐ Very tired
 - ☐ Fairly tired

- ☐ Fairly refreshed
- ☐ Very refreshed.

8. When you have no commitments the next day, when would you go to bed compared to your usual bedtime?
- ☐ Seldom or never later
 - ☐ Less than one hour later
 - ☐ 1 – 2 hours later
 - ☐ More than two hours later
9. You have decided to engage in physical exercise with a friend and the best time for them is between 7 am – 8am. Bearing in mind only **your own internal “clock”**, how do you think you would perform?
- ☐ I would be in good form
 - ☐ I would be in reasonable form
 - ☐ I would find it difficult
 - ☐ I would find it very difficult.
10. At what time in the evening do you feel tired and in need of sleep?
- ☐ 8 pm – 9 pm
 - ☐ 9 pm – 10:15 pm
 - ☐ 10:15 pm – 12:45 am
 - ☐ 12:45 am – 2 am
 - ☐ 2 am – 3 am
11. You wish to be at your peak performance for a test which you know is going to be mentally exhausting and lasting for two hours. Which one of the four test times would you choose?
- ☐ 8 am – 10 am
 - ☐ 11 am – 1 pm
 - ☐ 3 pm – 5 pm
 - ☐ 7 pm – 9 pm
12. If you went to bed at 11 pm, at what level of tiredness would you be?
- ☐ Not at all tired
 - ☐ A little tired
 - ☐ Fairly tired
 - ☐ Very tired
13. For some reason you have gone to bed several hours later than usual, but there is no need to get up at any particular time the next morning. Which one of the following events are you most likely to do?
- ☐ Wake up at usual time, but will not fall asleep
 - ☐ Wake up at usual time, but will nap thereafter
 - ☐ Wake up at usual time but will fall asleep again
 - ☐ Will NOT wake up until later than usual.
14. One night you have to remain awake between 4 am - 6 am to carry out a night watch. You have no commitments the next day. Which ONE of the following alternatives will suit you best?
- ☐ Would not sleep until the watch was over
 - ☐ Would take a nap before and sleep after
 - ☐ Would take a good sleep before and nap after
 - ☐ Would take all my sleep before the watch

15. You must do two hours of hard physical work. You are entirely free to plan your day and considering only your **internal “clock”**, which one of the following times would you choose?
- ☐ 8 am – 10 am
 - ☐ 11 am – 1 pm
 - ☐ 3 pm – 5 pm
 - ☐ 7 pm – 9 pm
16. You have decided to engage in physical exercise with a friend and the best time for them is between 10 pm – 11 pm. Bearing in mind only **your own internal “clock”**, how well do you think you would perform?
- ☐ I would be in good form
 - ☐ I would be in reasonable form
 - ☐ I would find it difficult
 - ☐ I would find it very difficult.
17. Suppose that you can choose your own work hours. Assume that you worked a five-hour day (including breaks) and that your job was interesting and paid by results. What time would you select?
- ☐ 5 Hours Starting any time between 4 AM and 8 AM
 - ☐ 5 Hours Starting any time between 8 AM and 9 AM
 - ☐ 5 Hours Starting any time between 9 AM and 2 PM
 - ☐ 5 Hours Starting any time between 2 PM and 5 PM
 - ☐ 5 Hours Starting any time between 5 PM and 4 AM
18. At what time of the day do you think that you reach your “feeling best” peak?
- ☐ 5 AM – 8 AM
 - ☐ 8 AM – 10 AM
 - ☐ 10 AM – 5 PM
 - ☐ 5 PM – 10 PM
 - ☐ 10 PM – 5 AM
19. One hears about “morning” and “evening” types of people. Which one of these types do you consider yourself to be?
- ☐ Definitely a morning type
 - ☐ More a morning type than an evening type
 - ☐ More an evening type than a morning type
 - ☐ Definitely an evening-type