PROTOCOLS

#45030 - The Operationality of the D and G Classifications of Functional Requirements During Requirements Engineering

Protocol Information

Review Type	Status	Approval Date	Renewal Date
Expedited	**Approved**	**Feb 21, 2024**	**Mar 01, 2025**

Expiration Date	Initial Approval Date	Initial Review Type
Mar 23, 2025	**Mar 22, 2023**	**Expedited**

Approval Comment

Renewal approved. Study may continue for another 12 months. - Heather Dekker

Protocol Renewal Form

Feedback

Renewal form

What kind of application are you renewing?

Standard Application/Imported Record

What is the status of the study?

Participants are being recruited or participation is ongoing

Approximately how many participants are left to recruit?

As many as we can find, to increase its statistical strength

In the past 12 months, have any participants withdrawn from the study?

No

In the past 12 months, have any of the following issues occurred, but have not been reported to Research Ethics?

No unreported events/changes

Does your project involve research with Indigenous people?

No

Does the study involve the delegation of a controlled act? (e.g., venipuncture, ultrasound, x-ray, etc.)

No

Renewal Confirmation

By submitting this renewal application I am requesting to extend the study another 12 months

The following list outlines project changes that typically need to receive ethics clearance through an amendment to the project prior to implementing the change.

General Information

Only the Principal Investigator/Faculty Supervisor can submit the application. This acts as a signature indicating approval of the application.

Principal Investigator / Faculty Supervisor

Daniel Berry

Department

School of Computer Science

Study title

The Operationality of the D and G Classifications of Functional Requirements During Requirements Engineering

General Questionnaire

Indicate the type of application you would like to complete

Standard application *

* The Standard application is for faculty level research and thesis level research.

** The course project application is for single-term (non-thesis) course based research and can be completed by students or the course instructor

Please confirm:

I understand that the type of applications listed above determine the form I am about to complete. If I have chosen the incorrect form I acknowledge that I may need to complete a new application.

People

University of Waterloo research team

Ensure **all** information in this table is completed.

Person

Daniel Berry

Waterloo Department

School of Computer Science

Email Address

dberry@uwaterloo.ca

Phone

Researcher Role

Principal Investigator

Permissions

Full Access

Mandatory Training

All University of Waterloo undergraduate and graduate students, faculty, and staff must complete the TCPS 2 CORE tutorial prior to submitting an application for review. See instructions or email researchethics@uwaterloo.ca if you have questions.

REQUIRED: Upload a copy of the TCPS 2 certificate or a screen shot showing module completion. Applications where the certificate/screen shot is not uploaded will be sent back to the researcher and not reviewed.

GetInfoForCertificate.pdf

As per the Waterloo policy on mandatory research ethics training, if you completed the TCPS2 tutorial more than 5 years ago, you may be asked to update your training within the next 6 months. You will be notified by email if this is the case.

Ensure **all** information in this table is completed.

Person

Victoria Sakhnini

Waterloo Department

School of Computer Science

Email Address

vsakhnin@uwaterloo.ca

Phone

Researcher Role

Co-Principal Investigator

Permissions

Full Access

Mandatory Training

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VS_tcps2_core_certificate.pdf

As per the Waterloo policy on mandatory research ethics training, if you completed the TCPS2 tutorial more than 5 years ago, you may be asked to update your training within the next 6 months. You will be notified by email if this is the case.

Do you have any investigators external to the University of Waterloo?

No

General details

Is this new study related to any previous application?

No

What is the estimated start and end date for the study?

Start Date (Date you anticipate beginning the recruitment of participants)
March 1, 2023

End Date (Date you expect the study will end, for example, the date when there will be no further contact with participants or when the data analysis will be completed for US funded research)
March 31, 2025

Does this research require approval from a UWaterloo departmental committee?

Not a department requirement

What is the level of the research to be conducted? Choose one.
Faculty, tenured, tenure track

Will this study involve Wilfrid Laurier University, Western University, Conestoga College or Local hospitals covered by the Tri-Hospital Research Ethics Board (Cambridge Memorial Hospital, Grand River Hospital and St. Mary's General Hospital)?

No

Has a version of this study been disapproved or rejected by any Research Ethics Board/Committee?

No

Special Instructions RE: Research During COVID-19 Pandemic
Are you proposing in this application a study that involves in-person (face-to-face) research activities either on-campus or off-campus?
No

Study description

State your research question(s)

Our research has shown the existence of two disjoint kinds of functional requirements with respect to a given computer-based system (CBS) scope, S. A requirement R is either * scope determined (D) or * scope determining (G) w.r.t. S, according to whether * R is dependent on or is implied by some requirement in S or * R is independent of all requirements in S, respectively. There are data that suggest that * it pays to find all D requirements w.r.t. S before implementing S, in order to avoid modifying code written for incorrect or incomplete requirements, and * it pays to postpone to a later version of the CBS, with a different scope, all G requirements w.r.t. S, in order to avoid throwing out or modifying code written for a requirement that proves later to be unnecessary. The RQ is: Can a practicing requirements engineer or a software engineering student who has taken a requirements engineering course correctly classify an arbitrary requirement as D or G w.r.t. an arbitrary scope with or without being an expert in the domain of the scope? That is, is the classification of a requirement as D or G w.r.t. a scope operational So that the suggested steps can be carried out during the development of a CBS?

Provide a clear, detailed description of the purpose, hypothesis, aim, and objectives of this study

The overall aim of our research is to empirically show that focusing RE for a chosen scope on finding all and only the D requirements for the scope, while deferring any G requirements to later releases, allows upfront RE (1) that does not go on forever, and (2) that discovers all requirements whose addition after implementation would be wastefully expensive, wasteful because these requirements are discoverable during RE if enough time is devoted to looking for them. This approach will allow more defect-free CBSs to be developed at lower costs than currently. Empirically validating this claim is of no use if no one is able to easily distinguish between D and G requirements in practice. That is, any practicing requirements engineer must be able to routinely and correctly classify any proposed new requirement w.r.t. any given scope. If not, no matter how good the method is, no one will be able to perform it reliably and correctly. Therefore, we have embarked on a sub-project to test whether distinguishing between D and G requirements is operational by requirements engineers. We want to test this ability under a variety of conditions: * experienced vs. student or novice requirement engineers, * expert vs non-expert in the domain of the scope, * in a list of requirements for a CBS to be built vs from a description of a completed CBS development project, Hypotheses: H1. Any * practicing requirements engineer or * software engineering student who has taken a requirements engineering course who is an expert in the domain of a scope is able to correctly classify an arbitrary requirement as D or G w.r.t. the scope. H2. Any * practicing requirements engineer or * software engineering student who has taken a requirements engineering course who is not an expert in the domain of a scope is able to correctly classify an arbitrary requirement as D or G w.r.t. the scope. H3. Any * practicing requirements engineer or * software engineering student who has taken a requirements engineering course who is an expert in the domain of a scope is able to correctly classify any defect of the scope according to whether the defect is due to a missing requirement and if it is due to a missing requirement, whether that requirement is a D or G requirement. H4. Any * practicing requirements engineer or * software engineering student who has taken a requirements engineering course who is not an expert in the domain of a scope is able to correctly classify any defect of the scope according to whether the defect is due to a missing requirement and if it is due to a missing requirement, whether that requirement is a D or G requirement. We will be testing these hypotheses with three different

questionnaires: 1. G and D requirements overview: testing understanding of the basic concepts of G and D requirements, 2. Postmortems: testing whether the requirements that affected CBS development projects' outcome can be correctly classified as G and D requirements, and 3. Defect Tickets: testing whether requirements that caused defects can be correctly classified as G and D requirements. Which questionnaire a participant sees will be determined randomly. Each participant will listen to a lecture describing G and D requirements and giving the information needed to be able to answer any question of any questionnaire correctly. Occasionally a participant will be able hear the lecture delivered in person. If no in-person lecture is available, a participant can play a video of the lecture before answering the questionnaire.

Provide background information, a rationale, and justification for conducting this study. Describe why the research is being done and what research has already been done in this area. Be sure to explain why this research is important.

The current great debate in Requirements Engineering (RE) is whether requirements for a computer-based system (CBS) 1. should be identified upfront before design and coding begin, as in the waterfall lifecycle, or 2. should be identified incrementally, interleaved with design and coding of requirements identified so far, as in the spiral or agile lifecycles. Here, "identifying requirements for a CBS up front" means "identifying requirements for the CBS in their entirety". The argument for identifying requirements upfront is that catching and fixing a requirement defect, i.e., a missing or incorrect requirement, during coding costs 10 times the cost of catching and fixing it during upfront RE. Thus, developing a CBS using waterfall methods, with requirements determined for the entire CBS up front before beginning any coding, leads to the shortest overall development time. The arguments for identifying requirements incrementally are that * requirements never stop coming; if design and coding do not start until _all_ requirements are identified, design and coding will _never_ start, and * many requirements change as more and more of a CBS is developed and as the world changes as a result of the CBS's being used; many requirements that were identified before will be thrown out; and the time spent identifying these thrown-out requirements is wasted! Thus, we should develop CBSs using agile methods, with requirements determined for each sprint of coding only at the beginning of the sprint. Attempts to settle the debate with empirical data have failed. Empirical studies go both ways and are overall inconclusive. Consequently, the choice of CBS development lifecycle, upfront RE or agile, to use in a CBS development project is made on the basis of gut feelings informed by experience and a recognition that if a project does something different from what is established practice, and the project fails, the heads of the project's decision makers will roll. The reason that data have not decided the debate is that each side is right! A1. Requirements _do_ never stop coming; and many requirements _do_ change, resulting in wasted effort. A2. There _are_ a lot of requirements defects that _can_ be found and fixed early if one is spending enough time doing RE, and a complete requirements specification (RS) for a CBS _dramatically reduces_ the incidence of expensive-to-fix requirement defects that appear in the code for the CBS. We believe that the two competing arguments, A1 and A2, are talking about two different kinds of

requirements, respectively: K1. One kind often cannot be identified until users are trying some version of the CBS and notice its necessity, and it is best handled incrementally so that when it is identified, it is less likely to change. K2. The other kind can be identified before design and coding if enough time is devoted to RE, and it is wasteful to leave this requirement to be found only later in the lifecycle when it is more expensive to fix. The empirical studies are inconclusive because none of them distinguishes these particular different kinds of requirements. We have identified a new binary categorization of new requirements being considered for addition to a CBS: C1. The first category of requirement is a _scope determininG (G)_ requirement, and C2. the second category of requirement is a _scope determineD (D)_ requirement. Here, the _scope_ of a CBS is the set of requirements --- a.k.a. use cases or features --- it implements. This categorization has been identified in the past under different names. For example, among use cases, a variation or exception of another use case is a D requirement, but a new, independent use case is a G requirement. Maybe, the data will be more conclusive for each category of requirements. The ability to categorize a requirement as either D or G allows focusing the precious RE effort for any version of a CBS on finding for its scope _all_ and _only_ those requirements, the scope's D requirements, that are necessary to have a complete RS for the version before its implementation begins. The procedure is to chose a scope, i.e., a set of G requirements, for your CBS. Focus all RE effort on finding all D requirements implied by the requirements in the chosen scope, while ignoring all other G requirements, i.e., those that are orthogonal to the requirements in the chosen scope. While this procedure sounds like the upfront RE in a waterfall method, it can be the initial steps in an agile method sprint for the chosen scope. The test cases that serve as the means to verify the correctness of the code for the sprint can be generated from the requirements that emerge from the procedure, if it is not desired to produce an actual RS.

In a maximum of 250 words, provide a non-scientific lay language description that summarizes the project outlining the purpose, anticipated benefits, and basic procedures. Write this summary as if it would be read by members of the general public who are not familiar with academic terms or acronyms. Use language suitable for a media release.

Before writing the software (SW) for any computer-based system (CBS), it is necessary to determine its requirements, in what is called requirements engineering (RE). Since no SW can be written without knowing what it is required to do, RE is inevitable even if it is done as the SW is being written. The scope of a CBS is the set of requirements that drive its implementation. Some believe that RE for a CBS should be done up front, producing a complete requirements specification before any of the CBS's SW is written. A common complaint is that (1) new requirements never stop coming; so upfront RE goes on forever with an ever growing scope. However, data show that (2) the cost to modify written SW to include a new requirement is at least 10 times the cost of writing the SW with the requirement included from the start; so upfront RE saves development costs, particularly if the new requirement is one that was needed to prevent a failure of the implementation of a requirement already included in the scope. We believe that both (1) and (2) are correct, but each is about a different kind of requirements, (1) scope determininG (G) or (2) scope determineD (D), respectively. We need to test whether distinguishing between D and G requirements is operational by requirements engineers so that any requirements engineering method that depends on identifying D and G requirements will be feasible to carry out.

What is the study design?

Analysis of questionnaire answers provided by anonymous respondents who have seen a lecture about the subject of the questionnaire.

Is this a pilot study?

No

Sample Size

What is the expected sample size? Outline the number of participants anticipated to take part in the study.

200

Was a formal sample size calculation completed?

No

Provide a rationale for the number of participants specified

A similar questionnaire conducted by others got around 100 respondents in over two years. We doubled that to reflect our optimistic hopes.

Study sites

Where is this study taking place?

Remote (online survey, virtual/telephone interview, etc.)

Please note that different guidelines/policies may apply when participants are recruited from certain locations.

Funding

Is the study funded/will it be funded?

Yes

Funding

List all funding sources that are new or ongoing

Funding status

Ongoing funding

Funding source is

Tri-agency / Canadian Government sponsor

Canadian Government agency

NSERC - Natural Sciences and Engineering Research Council of Canada

Program name if applicable

Discovery

Work-order or award number, if known

50503-10352

What is the expected period of funding

Funding from

June 1, 2015

Funding to

May 31, 2028

Conflict of interest

Are there any potential, perceived, or actual financial or non-financial conflicts of interest of the research team in undertaking the proposed research?

No

Benefits

Are there direct benefits of the proposed research to the study participants?

Yes

Explain the benefits to study participants

Increased awareness of the D and G requirements and their distinction. A participant could start to notice the presence of these kinds of requirements in er own work and adjust er focus to improve the quality of the CBSs E develops. ("E", "em", and "er" are gender non-specific third-person singular pronouns in subjective, objective, and possessive forms, respectively.)

What are the scientific and/or scholarly benefits of the proposed research?

We will know if classification of CBS requirements as D or G is operational, and if so, then any requirements engineering method that depends on knowing the classification of every considered requirement is feasible.

Participants

Participant general categories

University of Waterloo undergraduate and/or graduate students
University of Waterloo staff and/or faculty
Adults (age 18-64 years)
Older adults (age 65 +)

Are you conducting research in classes with students as your participants to evaluate a teaching method or object?

No

Describe the sample in detail and list any specific inclusion/exclusion criteria for the study

No exclusion criteria. Inclusion criterion: anyone who believes that E is a practicing software systems or requirements engineer or analyst. ("E", "em", and "er" are gender non-specific third-person singular pronouns in subjective, objective, and possessive forms, respectively.)

If you are excluding people on certain characteristics provide a justification for the exclusion.

N.A.

Will a screening process be used to determine eligibility in the study based on the inclusion and/or exclusion criteria identified above?

No

Recruitment

Identify from where/what sources potential participants will be recruited.

University of Waterloo campus (e.g., SLC, Engineering Foyer, laboratories)
Through email/internet (e.g., social media networks)
Businesses, NGOs or Government Offices
Another institution other than Waterloo (e.g., University of Guelph)

Where on campus do you intend to recruit?

Participation is completely anonymous and voluntary. Participation is not made part of any course's content. Thus, any recruitment on campus is in the form of an announcement pointing to a Website. The only reason for being selective about where we announce the availability of the questionnaire and the Website is to try encourage that only practicing software systems or requirements engineers or analysts participate. Therefore, we will recruit Computer Science, Electrical & Computer Engineering, and Software Engineering students and faculty in classes and by e-mail. An in-class invitation will consist of a slide to be read during a class's announcement slot. We will request faculty in the School of Computer Science, the Electrical & Computer Engineering Department, and the Software Engineering Program to please read the invitation in their classes. The invitation will be sent by e-mail to Computer Science, Electrical & Computer Engineering, and Software Engineering faculty to recruit them and then to the various Computer Science, Electrical & Computer Engineering, and Software Engineering student societies and clubs for posting on their e-mail lists. Besides describing the questionnaire and where to find it, the invitation describes how to reach us for questions.

Indicate what email listing, internet site or network you intend to recruit from

We will post the invitation to participate in relevant groups at Linkedin and at Computer Science, Software Engineering, and Requirements Engineering professional societies' Websites. These groups and Websites are moderated so that they may exercise control over what is posted to their members. Besides describing the questionnaire and where to find it, the invitation describes how to reach us for questions.

Identify the business, NGO or government offices that you will be recruiting from

We will send the invitation to our contacts, i.e., former students and colleagues, who work at private companies and government agencies that are dealing with computer-based system requirements. Besides describing the questionnaire and where to find it, the invitation describes how to reach us for questions.

Provide details on this other institution

Each of the two co-PIs has lived in countries outside of Canada and has connections to industry and government there. The co-PIs will approach their contacts there with the invitation. They will also approach colleagues and former students elsewhere around the world. Besides describing the questionnaire and where to find it, the invitation describes how to reach us for questions.

What recruitment materials will be used? See sample recruitment materials.

Brochures, pamphlets, flyers
Email script
Verbal script
Website
Social media

Describe how the website will be used for recruitment

The invitation will be posted there.

Describe how social media will be used

The invitation will be posted there.

Upload your recruitment materials

Upload your recruitment materials

InvitationAndRecruitment.pdf

Study group

Will potential participants be recruited through pre-existing relationships with members of the research team (e.g., employees, students, or patients of research team, acquaintances, own children or family members, colleagues, etc.)?

Yes

Outline the relationship between the researchers and potential participants (e.g., professor-student, colleagues)

Professor--student, Professor--former student, colleague--colleague

Could this relationship compromise the potential participant's freedom to decline participation?

No

Explain

Students learn about the invitation in the form of an announcement, not in the form of an assignment on which their grades depend. Whether a potential participant chooses to go to the questionnaire Website is er own business. ("E", "em", and "er" are gender non-specific third-person singular pronouns in subjective, objective, and possessive forms, respectively.)

Are potential participants in this study members of an organization that is taking part in this study (e.g., employees of a company, etc.)?

No

Methods and procedures

Which of the following will be conducted for this study?

Surveys/questionnaires

How will the survey(s) or questionnaire(s) be administered?

Online or web

Provide the URL of the survey, if available

Not known yet

Will quotations be used in the write-up of the study

Yes

What type of quotations will be used?

Anonymous

For each of the procedures indicated above, provided a detailed, sequential description of how they will be used in the study. Provide one or more paragraphs describing how you are recruiting participants, obtaining consent, what participants are asked to do, and how the research team will be using the collected data.

The normal way that a participant participates in the questionnaire is that E responds to the invitation by going to the questionnaire Website, which guides em through a procedure that includes listening to the video of a lecture via a link at the site. Rarely, a participant may have heard the lecture in person. For example, some conferences in my area have live empirical studies sessions, in which acceptees present their studies and encourage attendees to participate. Then we might give the lecture in person and then send attendees to the Website, telling them to skip the online lecture. Below are the planned contents of the Website. Each "<xxxx>" is a link to "xxxx". If within an "xxxx" there is a "<yyy>" at the end, "yyy" is the name of one of the files uploaded with this request. (PLEASE SEE THE "Consent and Withdrawal" SECTION BELOW FOR SOME OF THE FILES.) The contents between the two "====" lines are also the contents of the uploaded "Instructions" file.
========== Welcome to D vs G Requirements Website. We hope you have come here to answer our questionnaire. Please first look at a description of the study, that motivates the questionnaire and that provides the information you need to make an informed decision about your voluntary participation. <To read this description, click this sentence <InformationAndConsent>>. If after reading this description you still want to answer the questionnaire, please continue. Otherwise, you are free to move on to another Website. The procedure to answer the questionnaire is: 1. Listen to a lecture --- in person or from a video --- about a new way to understand and classify requirements for a computer-based system. If you are in a situation in which you are able to listen to an in-person lecture to prepare you to answer the questionnaire, enjoy and then move on to Step 2! Otherwise, <If you need to listen to the video, click this sentence <Video>>. 2. Fill out a questionnaire that has you exercise the new classification scheme with some simple requirements and asks you for some explanations of some of your answers. <To answer the questionnaire, click this sentence <one of the Questionnaires>>. 3. Look at <a document that describes what you are consenting to when you voluntarily submit your answers <NonForm>>. 4. Make a completely voluntary decision of whether to submit your answers. If you consent, then submit your answers, and we will receive them. If you do not consent, then do not submit your answers, and we

will receive no answers from you. It is that simple! In either case, we do not know who you are, unless you tell us in some free-text answer. Your having filled out the questionnaire and having submitted your answers is taken as proof of your having consented to our knowing and publishing whatever is in your answers, including the free-text answers. <To voluntarily submit the questionnaire, click this sentence>. 5. Please look at our feedback to you. <To read this feedback, click this sentence <FeedbackLetter>>. Thank you for your participation. If, independently of participation, you would like to receive a copy of whatever report we generate from the data, please send e-mail to one of Daniel Berry <dberry@uwaterloo.ca> and Victoria Sakhnini <vsakhnin@uwaterloo.ca>. While we might be able to say that you probably participated, since your data do not identify you, we have no way to correlate you with your data. ========== The Website will be at <docs.google.com>, as it has features for hosting questionnaires and working with the data collected from participants. We will transfer answers from <docs.google.com> to the computers on which the PIs work. As mentioned, there are multiple sets of questions for the questionnaire. The research involves several different research questions and sets of corresponding hypotheses. We have not yet decided whether to attack these research questions concurrently, and if not, in which order. If we attack them concurrently, which questionnaire a participant gets will be decided by a random number generator. If we attack them sequentially, which question a participant gets will be decided by when E visits the Website. E will get the questionnaire that is current when E visits the Website. We have included all the sets of questions in this request so that we do not have to submit an amended request to use a different set of questions in the questionnaire.

Please upload any study materials related to the procedure(s)

Study material

Instructions.pdf

Study material

G vs D Requirements Lecture Slides.pdf

Study material

G and D Requirements Overview Questionnaire.pdf

Study material

Postmortem Questionnaire.pdf

Study material

Defect Tickets Questionnaire.pdf

Study material

FeedbackLetter.pdf

Does the study involve the administration or use of an approved drug or natural health product?

No

Will you be collecting any biological specimens?

No

Will you be creating or contributing to a bio-bank, bio-repository, registry, as part of the study?

No

Will you be doing any genetic testing or analysis?

No

Incidental and secondary findings

See Guideline for reporting incidental and secondary findings to study participants

Are any of the methods or procedures used likely (i.e., a real possibility and probability) to reveal an incidental finding (i.e., discoveries made in the course of research but that are outside the scope of the research and/or results that are outside the original purpose for which a test or procedure was conducted)?

No

Are any of the methods or procedures used likely to reveal a secondary finding (i.e., findings that are not the primary target of the test or procedure; rather, it is an additional result that is actively sought)?

No

Equipment use

Will there be any equipment used as part of this study?

No

Deception

Does the study involve deception or partial disclosure?

No

Risks and safeguards

Considering each method or procedure to be used in this study, indicate if participants might experience any of the following risks or harms

No known or anticipated risks

Outline the criteria for stopping the study early due to safety concerns/other issues.

None

Privacy

Will demographic and/or background information be asked of participants? If so, ensure that the demographic questions have been uploaded in the methods section.

No

Participant identification - If applicable, include how participants will be referenced in study results.

No identification will be collected. If we need to identify participants in the write up, we will call them "P1", "P2", etc.

If applicable how will the key/list that links participants' codes with their actual name and/or consent forms be stored and protected? Also, outline how long the key/list will be stored.

N.A.

Are there any limitations to the promise of confidentiality?

No

Will any study data be leaving the University of Waterloo, the province, or country (e.g., member of research team is located in another institution, province, or country, etc.)?

Yes

Will any identifiable participant information be leaving the University of Waterloo, the province, or country (e.g., member of research team is located in another institution, province, or country, etc.)?

No identifiable information being collected

Where will the study data be sent? Why is it necessary for it to leave the University of Waterloo?

One of the co-PIs lives in Brazil.

Explain what data will be leaving the University of Waterloo, who will receive it, why they need access, and what safeguards will be used to protect the identity of participants and the privacy of their data.

The participants' answers to the questionnaire; these answers contain no identifying information.

Describe the measures in place to ensure secure transfer of study data outside of the University.

Ordinary e-mail of data that contains no identifying information.

Has a research data agreement or data transfer agreement been created?

Yes

Will any collected data or information be entered into a database for future use?

No

Are there other members of the research team who are not named on this application (e.g., co-op students, research assistants, or other temporary personnel) who may carry out specific tasks involved in your study?

No

Will individual participant identities be confidential in the publication or release of the study findings?

Yes

Data storage

What type(s) of data will be collected for this study?

Electronic files

For each type of information collected, identify where the data will be stored

On each co-PI's password and 2FA protected computer.

For each type of data collected, identify the minimum retention period

at least 2 years

Data Management

Are there plans to link the data collected with other data sets, databases, or registries?

No

The Tri-Agency Open Access Policy on Publications and some journals are requesting that research data be provided to an open access repository to promote the availability of findings, to enhance transparency and share with the widest possible audience.

Do researchers plan to make the data-set available in an online repository/archive?

Yes

Identify the repository or database and outline whether the dataset will be anonymized or if it will include identifiable information. If this is not yet know please state this.

If we ever publish a paper about the data, the data, which contain no identification, will be available as part of the replication package with the paper.

Do you have a data management plan?

Yes

Consent and Withdrawal

What member(s) of the research team will be responsible for obtaining informed consent?

The online questionnaire itself obtains a participant's consent when the participant voluntarily submits er answers.

Is there a relationship between the potential participant(s) and the person obtaining consent?

No

How will consent be obtained

Online consent (e.g., click one of two radio buttons)

Upload Information and Consent Materials - See resources and samples for creating information consent letters. Refer to the guide for creating an information consent letter on this webpage.

Upload Information and Consent Materials

InformationAndConsent.pdf

Study group

Upload Information and Consent Materials

NonForm.pdf

Study group

Do you anticipate that you will need to make special accommodations for your participant group?

No

Do you anticipate needing to put in place any special procedures when obtaining informed consent?

No

Will consent need to be re-documented throughout the life of this study?

No

Describe the participants rights and processes for withdrawing consent.

A participant may decline to answer any questions that E does not wish to answer, and E can withdraw er participation at any time by not submitting er responses. ("E", "em", and "er" are gender non-specific third-person singular pronouns in subjective, objective, and possessive forms, respectively.)

Outline what will be done with the participant's information (data, samples, etc.) if they withdraw from the study.

The participant's answers are not saved, and they get deleted.

Will any individuals taking part in this study be unable to provide their own informed consent?

No

Remuneration

Will there be remuneration provided to show appreciation for a participant's time, effort, skills, etc. to take part in the study?

No

Will participants incur any expenses by participating in the study?

No

Feedback and Appreciation

How will you show appreciation to participants for taking part in the study?

The end of the instructions and the last page of the questionnaire thank the participant: "Thank you for your participation."

When will feedback/appreciation be provided to participants (e.g., immediately after the session, at the end of a survey, mail results at time X.)?

The end of the instructions and the last page of the questionnaire thank the participant: "Thank you for your participation."

Upload Feedback/Appreciation materials

Upload Feedback/Appreciation materials

Study group

The last page of each uploaded questionnaire has the feedback and appreciation materials

How can participants learn about the study results/obtain a summary of the findings if interested?

The instructions informs each participant: "If, independently of participation, you would like to receive a copy of whatever report we generate from the data, please send e-mail to one of Daniel Berry <dberry@uwaterloo.ca> Marcia Lucena <marciaj@dimap.ufrn.br> Victoria Sakhnini <vsakhnin@uwaterloo.ca> While we might be able to say that you probably participated, since your data does not identify you, we have no way to correlate you with your data."

Other Details

Provide any other information relevant to this study you wish to explain to the Research Ethics Board reviewers or to the staff in the Office of Research Ethics.

There is no other information.

Other Attachments

Upload any additional study documents

Attachments

Attestation

As the Principal Investigator/Faculty Supervisor/Local Investigator, I attest to the following:

- I will ensure all co-investigators, collaborators, and student investigators listed on this application have reviewed the application contents and will conduct the study according to the application/protocol.
- I am aware that any changes made to the research must be reviewed and provided clearance before the changes are implemented. Change requests (i.e., an amendment) are to be submitted through the system. I am also aware ethics clearance for this study is valid for only 12 months unless I renew the study prior to the ethics clearance expiry date. If an annual renewal report is NOT submitted through the system prior to the expiry date, the study will be suspended, all work on the study must stop, and Research Finance will be notified which will result in a hold being put on the funds associated with this study.
- I agree to comply with the Tri-Council Policy Statement (TCPS2) for conducting research with human participants and with University of Waterloo policies and guidelines when conducting this study (e.g., statement on human participant research, IST policies, etc.).
- I confirm I have read the University of Waterloo Research Integrity guidelines and I agree to comply with the policies and guidelines of my profession or discipline regarding the ethical conduct of research involving humans.

By submitting this application I agree to the above attestations and will ensure the research is conducted accordingly

Only the Principal Investigator/Faculty Supervisor can submit the application. This acts as a signature indicating approval of the application.

This is the end of the application form. Click submit in the right menu if you are ready to send it to the Research Ethics Office.