Inclusion of Individuals with Autism Spectrum Disorder in Software Engineering: A Multivocal Study (Study protocol)

Contents

1 Background

Autism spectrum disorders (ASD) are developmental disabilities caused by differences in the brain that produce problems with communication and social interaction, as well as restrictive or repetitive behaviors or interests. Currently, there are no other known causes, which means that scientists believe that ASDs have multiple causes that, when acting together, change the most common ways in which people develop. People with ASD behave, communicate, interact, and learn in ways that differ from those of most people. Often, there is nothing about their appearance that distinguishes them from others. The abilities of individuals with ASD can vary significantly.

ASDs appear before the age of three and can last for a lifetime, although symptoms may improve over time. Some children exhibit symptoms of ASD during the first 12 months of life. In other cases, the symptoms may not appear until 24 months or later. Some children with ASD acquire new skills and reach developmental milestones by around 18 to 24 months of age, and then stop acquiring new skills or lose existing skills.

As children with ASD become adolescents and young adults, they may have difficulty forming and maintaining friendships, communicating with peers and adults, or understanding what behaviors they expect at school or work. They may come to health care providers because they also have conditions such as anxiety, depression, or attention deficit hyperactivity disorder, which occur more often in people with ASD than in people without ASD.

Individuals with ASD often face various challenges in social integration, both at school and work. Individuals with autism may experience difficulties in verbal and nonverbal communication, which can make it difficult for them to interact with co-workers, clients, or superiors. They may have difficulty interpreting facial expressions, tone of voice, or body language, which can affect their ability to establish effective relationships. Additionally, people with ASD often have different sensory sensitivities, which means that they may be more sensitive to visual, auditory, and tactile stimuli. This can make it difficult for them to adapt to work environments that are noisy, brightly lit, or have a large amount of sensory stimuli, which can lead to stress or concentration difficulties. On the other hand, autism is associated with cognitive rigidity and difficulties in adapting to unexpected changes or situations. In work environments that require flexibility, adaptability, and the ability to make quick adjustments, people with autism may find it challenging to manage changes in their work tasks, schedules, or expectations.

There are multidimensional challenges in the field of Software Engineering concerning people with ASD. Software development often involves team collaboration, effective communication, and teamwork. Individuals with ASD may face challenges in interpreting social cues, understanding implicit communication norms, or interacting with colleagues. This can make effective collaboration and teamwork more difficult. On the other hand, people with autism often have exceptional abilities to focus on details and close attention. However, this can lead to a tendency to focus on specific details to the detriment of the project overview or the ability to prioritize and manage multiple tasks. Although there is evidence of the inclusion of people with ASD in society, there is little systematized information on how to include people with Software Engineering from an academic and professional perspective.

This document describes a systematized multivocal literature review protocol that aims to identify, describe, and characterize proposals that will help the inclusion of individuals with ASD in the Software Engineering discipline. It documents all the steps to be executed in systematic literature mapping with their corresponding details. The contribution of this protocol is that it replicates our study to enrich the results obtained.

1.1 Related work

Costello et al. [4] described a multivocal literature review (MLR) that discussed the cognitive style and talents of individuals with autism spectrum disorder (ASD). The authors conducted an analysis to understand the challenges autistic individuals face in their transition to the workplace while highlighting the challenges they face in their daily work life, including work environments and workplace meetings. The authors concluded that even with the aforementioned protocols, people with ASD still face challenges related to their lack of interpersonal skills and employment. Additionally, they mentioned that people with ASD have difficulty communicating with their peers and interpreting nuances, which cause stress and anxiety in the workplace.

Marques et al. [8] conducted a systematic mapping of the literature to identify and analyze studies reporting the evaluation of software technologies for users with ASD. The authors described that user testing was conducted in clinics or classrooms with health professionals, teachers, or caregivers, mediating the interaction between autistic users and software technologies to promote better engagement. Additionally, observation, questionnaires, and interviews were the most frequently adopted data collection methods. However, we did not identify specific instruments to assess aspects of ASD related to software technologies. Finally, the authors intend to encourage the proposal of assessment protocols for various types of software technology.

Krause et al. [6] discussed how mobile apps for people with ASD are developed and evaluated through a systematic mapping of apps for people with ASD to better understand their rationale, motivations, mode of evaluation, resources, and user profile. The authors mentioned that the main procedures used to support apps for people with ASD are questionnaires, such as the Checklist for Autism in Toddlers (CHAT), AQ-10 quiz, and Applied Behavior Analysis (ABA) intervention.

Morris et al. [9] explored the day-to-day lives of neurodiverse professionals (such as those with autism spectrum disorder), attention deficit hyperactivity disorder (ADHD) and/or other learning disabilities, such as dyslexia. The authors worked with ten neurodiverse professionals to identify the challenges that prevent these employees from realizing their full potential in the workplace. As a contribution, the authors offer insights into how employers can better support the needs of neurodivergent workers.

2 Systematic study process

2.1 Research objective

This study aims to identify, characterize, and describe barriers, facilitators, and methodological proposals described by the community to include individuals with ASD in the discipline of Software Engineering. Currently, several academic and industrial initiatives allow individuals with ASD to move from exclusion to integration into Software Engineering. However, integration points to the definition and creation of different scenarios or spaces for individuals with ASD, so that in coexistence and teamwork, there is still a separation. Therefore, our research focuses on describing the facilitators, barriers, and proposals that have been published in the context of the transition from integration to inclusion of individuals with ASD.

2.2 Research team

The research team consisted of four researchers.

- Principal researcher: Gastón Márquez, Univrsidad del Bío-Bío and researcher at Sociomed, Chillán, Chile. He conducted a systematic mapping of the literature and executed all the steps of the process described in Figure 1.
- Collaborating researcher: Michelle Pacheco, nurse, and clinical consultant, Chillán, Chile. She participated in the analysis of the results and in the clinical discussion regarding the proposals described in the papers.

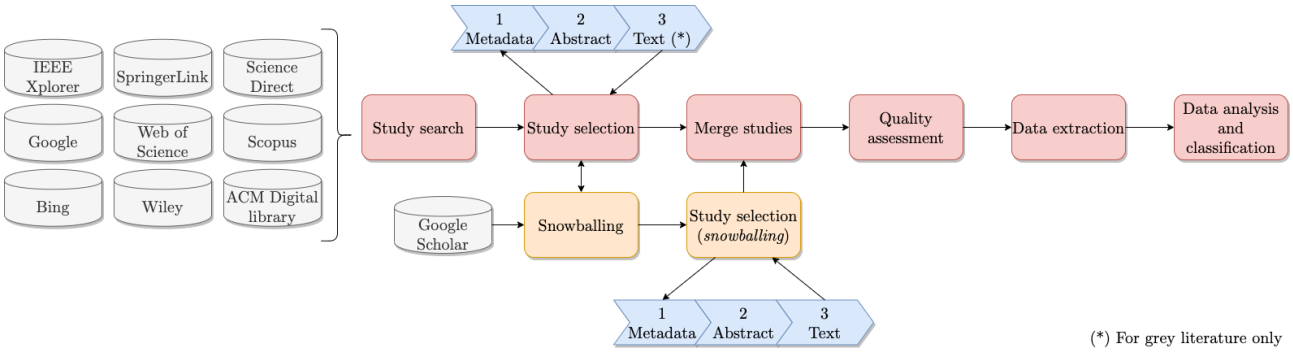

Figure 1: Process of multivocal review executed in our study

Additionally, she collaborates with the analysis of the results of the systematic mapping of the literature and incorporates in the clinical critical analysis of the proposals of the papers.

- Senior researcher: Carla Taramasco, Institute of Technology for Innovation in Health and Wellbeing, and researcher at Sociomed, Universidad Andrés Bello, Viña del Mar, Chile. She supported all the steps of the systematic literature mapping process. Additionally, she provided feedback on all the results obtained and helped with their analysis.
- Advisor: Esteban Calvo, Director of Sociomed, Universidad Mayor, Santiago, Chile. He provided a systemic examination of the results of this study. He contributed suggestions on the clinical and health potential of the results obtained.

2.3 Research questions

The research questions are as follows:

Research question 1 (RQ1)
Which are the facilitators of including individuals with ASD in Software Engineering projects?

Rationale: This research question aims to identify, classify, and describe the main facilitators mentioned by primary studies that include individuals with ASD in software engineering projects.

Research question 2 (RQ2)
Which are the barriers to including people with ASD in software engineering projects?

Rationale: Similar to the previous question, this research question aims to identify, classify, and describe the main barriers mentioned by primary studies to include individuals with ASD in software engineering projects.

Research question 3 (RQ3)
Which proposals have been made to include individuals with ASD in software engineering projects?

Rationale: This question is intended to classify and illustrate the state-of-the-art methods and techniques proposed by the community to include individuals with ASD in Software Engineering.

2.4 Study search

2.4.1 Academic search

To search for primary studies, we used a search string that represented the main aspects of the research questions. Therefore, we followed the suggestion of Petersen et al., which mentions using a population, intervention, comparison, and outcome approach. Nevertheless, it is worth mentioning that, because our study is a systematic mapping of the literature, we cannot limit the search string to specific comparisons and outcomes because it would bias the search results. Therefore, our search string does not consider dimensions "comparison" and "outcome". Table 1 summarizes the search strings.

To explore the papers included in our study, we selected electronic databases that contain a wide range of up-to-date scientific information in the discipline of Software Engineering. In addition, we selected databases that published as many peer-reviewed papers as possible to guarantee the quality and scientific rigor of the papers to be explored. Table 2 summarizes the databases used in this review.

Table 1: Search string description

Dimension	Description	Keywords
Population	Papers related to autism spectrum disorders including students and professional and diversity	"Autism Spectrum Disorder" OR "ASD"
		"Students" OR "Professionals" OR "Learners" OR "Participants" OR "Candidates" OR "Professionals" OR "Employees" OR "Workers" OR "Practitioners" OR "Experts"
		"Inclusion" OR "Diversity" OR "Neurodiversity"
Intervention	Papers related to Software Engineering	"Software Engineering" OR "Software Development" OR "programming" OR "code"

Table 2: Databases consulted in our study

Name	URL
IEEE Xplore	https://ieeexplore.ieee.org/Xplore/home.jsp
SpringerLink	https://link.springer.com
Scopus	https://www.scopus.com
ACM Library	https://dl.acm.org
Web of Science	http://login.webofknowledge.com
ScienceDirect	https://www.sciencedirect.com
Wiley	https://onlinelibrary.wiley.com

To avoid affecting the completeness of the search for papers, we conducted pre-searches of the databases described in Table 2. The intention of conducting these pre-searches was to check whether it makes sense to explore the databases, as some databases may not return a significant number of papers. Therefore, we use words such as "spectrum," "autistic" and "software" to analyze the number of papers shown in each database. For each database, the results obtained with the three keywords were significant, so we further adjusted the search with the keyword "engineering." As a result, we managed to obtain multiple results in the databases, so we decided not to omit any database from Table 2. However, we realized that it is necessary to re-adjust the words "spectrum," "autistic" and "disorder" in each database as we obtained some papers describing software and information systems for treating people on the autistic spectrum. Despite their significant contribution to the knowledge of these papers, they do not satisfy the research objectives of our study. On the other hand, the pre-search helped us detect studies that use software to help people with ASD. However, these studies were not included in our review.

The following boxes describe the search strings used in each database.

Search string used on IEEE Xplorer

(All Metadata:autism spectrum disorder OR All Metadata:ASD OR All Metadata:autistic OR All Metadata:autism) AND (All Metadata:inclusion OR All Metadata:inclusive OR All Metadata:neurodiversity) AND (All Metadata:Learners OR All Metadata:Participants OR All Metadata:Candidates OR All Metadata:Professionals OR All Metadata:Employees OR All Metadata:Workers OR All Metadata:Practitioners OR All Metadata:Experts) AND (All Metadata:software engineering OR All Metadata:programming OR All Metadata:coding OR All Metadata:software development)

Search string used on SpringerLink

(autism spectrum disorder OR ASD) AND (inclusion OR inclusive OR Neurodiversity) AND (students OR professionals OR Employees OR Workers OR Practitioners OR Experts) AND (software engineering OR programming OR coding OR software development)

Search string used on Scopus

TITLE-ABS-KEY(autism spectrum disorder OR ASD) AND TITLE-ABS-KEY(inclusion OR inclusive OR Neurodiversity) AND TITLE-ABS-KEY(students OR professionals OR Employees OR Workers OR Practitioners OR Experts) AND TITLE-ABS-KEY(software engineering OR programming OR coding OR software development)

Search string used on ACM

[[All: "autism spectrum disorder"] OR [All: "asd"]] AND [[All: "inclusion"] OR [All: "inclusive"] OR [All: "neurodiversity"]] AND [[All: "students"] OR [All: "professionals"] OR [All: "employees"] OR [All: "workers"] OR [All: "practitioners"] OR [All: "experts"]] AND [[All: "software engineering"] OR [All: "programming"] OR [All: "coding"] OR [All: "software development"]]

Search string used on Web of Science

ALL=((autism spectrum disorder OR ASD) AND (inclusion OR inclusive OR Neurodiversity) AND (students OR professionals OR Employees OR Workers OR Practitioners OR Experts) AND (software engineering OR programming OR coding OR software development))

Search string used on ScienceDirect

(autism spectrum disorder OR ASD) AND (inclusion OR inclusive OR Neurodiversity) AND (students OR professionals OR Employees OR Workers OR Practitioners OR Experts) AND (software engineering OR programming OR coding OR software development)

Search string used on Wiley

"autism spectrum disorder OR ASD" anywhere and "inclusion OR inclusive OR Neurodiversity" anywhere and "students OR professionals OR Employees OR Workers OR Practitioners OR Experts" anywhere and "software engineering OR programming OR coding OR software development" anywhere

2.4.2 Grey literature search

We used different search engines to collect sources related to our research objectives. As suggested by the guidelines of Garousi et al. [5], we used general search engines, such as Google and Bing, to search for information. Additionally, we used forums and specialized ADS platforms to complement this information. Because there is a lack of standardization on how to search for information in grey literature, we used the criteria proposed by Garousi et al. [5] to determine when to stop searching for information. In this regard, we established that as the sources consulted no longer provided quality information and the explicit evidence for each became variable, we stopped looking at that source. Garousi et al. [5] referred to this as an evidence of exhaustion.

2.5 Study selection

The inclusion and exclusion criteria are as follows:

- Inclusion criteria (IC)
  - IC1: The study must address and describe, as far as possible, approaches to managing individuals with ADS in Software Engineering.
  - IC2: The study must focus on ADS inclusion and Software Engineering.
  - IC3: The study must mention the positive and negative aspects regarding the inclusion of individuals with ADS in Software Engineering.
  - IC4: The study must be published in English.
- Exclusion criteria (EC)
  - EC1: Studies using software to improve the quality of life of individuals with ADS.
  - EC2: Short studies (less than four pages).
  - EC3: Secondary studies.
  - EC4: Posters, tutorials, talks and editorials.

In the first round of screening, a researcher from the team reviewed the metadata of studies in all databases. In this round, we focused on the titles and keywords in the context of the inclusion criteria IC2 and IC4. We did not consider the rest of the inclusion criteria, as it is not possible to analyze in detail the information describing the metadata. In the second round, two researchers applied all the inclusion criteria. Both researchers analyzed the same papers and discussed the filter results. If the researchers agreed to the selected studies, the third round is continued. In the case of disagreement, the rationale of each researcher is argued until an agreement is reached. If there is no agreement, the study proceeded to the third round. Finally, in the third round, all the researchers of the research team are included to conduct a complete reading of the studies in order to extract the necessary information for the analysis of our study.

2.6 Snowballing process

To avoid omitting studies and increasing the limitations of our research, we executed a snowballing method [12]. Often, this method is used when information in the studies is difficult to find. The main characteristic of snowballing is the use of initial studies to generate additional research. In this study, we used this method to increase the search scope of the studies. Therefore, we performed backward and forward snowballing procedures (i.e. references and citations), using Google Scholar[1]. Backward snowballing involves examining the reference lists of papers to identify additional studies that may have been overlooked in the initial search. The process usually involves following citations backward in time from the selected articles to identify earlier studies that have contributed to the research area. On the other hand, forward snowballing analyses papers that have cited the selected studies to identify more recent publications that have built on or referenced the initial research. The studies obtained from this process were analyzed using the same inclusion and exclusion criteria as those defined in Section 2.5 .

2.7 Quality assessment

According to Carroll et al. [3], there is a trend in literature reviews that discusses the critical appraisal needed to determine the quality of qualitative research in order to inform synthesis and practice. In recent years, there has been a growing trend for researchers to make critical qualitative appraisals of the papers obtained in reviews. Although we can argue that using a systematic search protocol mitigates, to some extent, the selection of papers of questionable quality, we defined a quality assessment of the selected papers to increase the credibility of our study. Since our study focuses on health, we used and adapted the quality assessment proposed by The Health Sciences Library's Systematic Review [1], which focuses on assessing the quality of papers in four aspects: relevance, reliability, validity, and applicability. The following points describe the quality assessment questions:

- Relevance
  - Q1: Is the research method or study design appropriate for answering research questions?
  - Q2: Are specific inclusion/exclusion criteria used or described?
- Reliability
  - Q3: Is the effect size relevant to practice in the education and IT industries?
- Validity
  - Q4: Is the estimate of the contribution of the study accurate?
  - Q5: Was there sufficient number of subjects or evidence in the study to establish that the results did not occur by chance?
  - Q6: Were the subjects randomized, and were the groups comparable? If not, this could introduce bias.
  - Q7: Are measurements/instruments validated in other studies?
  - Q8: Could there be confounding factors present?
- Applicability
  - Q9: Can the results be replicated or applied?

Each of the quality assessment questions are evaluated using the following scale: "Yes", "Partially", "No", and "Not applicable". For the first three scales they are measured with the following scores: 1, 0.5, and 0. We leave the scale "Not applicable" as an option if the paper cannot be assessed with the proposed scale. Selecting this scale required a rationale for the researcher.

[1] https://scholar.google.com

On the grey literature side, Garousi et al. suggested a checklist to assess the quality of the sources obtained in the review. Therefore, we adapted part of this checklist and oriented it to the objectives of our research. The following points describes the quality assessment questions.

- Authority of the producer
  - QG1: Does the author of the source belong to a reputable organization?
  - QG2: Does the author have experience in the field?
- Methodology
  - QG3: Does the source describe the objective clearly?
  - QG4: Does the source use up-to-date and relevant references?
  - QG5: Does the source address a specific issue?
  - QG6: Does the source refer to a specific population?
- Objectivity
  - QG7: Does the source use balanced use of information?
  - QG8: Is the source of the information as objective as possible?
  - QG9: Are the conclusions supported by data?

2.8 Data extraction

To extract data from the papers systematically, we used the template described in Table 3. In this template, we used items that allowed us to obtain demographic data from the papers as well as to answer the research questions.

Table 3: Items to extract information from papers

Item	Data item	Description	RQ
I1	Identification	Unique identifier for each paper	Demographics
I2	Authors	Details of the names of authors of the paper	
I3	Title	Title of the paper	
I4	Venue	Name of the conference, symposium, workshop, journal, or book chapter where the study was published	
I5	Venue classification	Classification of venues: conference, symposium, workshop, journal, or book chapter	
I6	Year	Year of publication	
I7	Research facet	Classification of the study facet based on the following categories: validation research, evaluation research, solution proposal, philosophical papers, opinion papers and experience papers	
I8	Study contribution	Classification of the study contribution based on the following categories: model, theory, framework, guidelines, lessons learned, advice, and tool	
I9	Type of ADS addressed in the study	Classification of studies based on the type of ADS on which they focused. This classification corresponds to autism, Rett syndrome, Asperger syndrome, and pervasive developmental disorder not otherwise specified	
I10	Facilitators for including individuals with ASD	Identification and description of facilitators detected in the studies to include individuals (students and professionals) with ASD in Software Engineering	RQ1
I11	Barriers to including individuals with ASD	Identification and description of barriers detected in the studies to include individuals (students and professionals) with ASD in Software Engineering	RQ2
I12	Identification and description of the study proposal	Characterization of the study proposal with regard to the inclusion of ASD in Software Engineering	RQ3

The process of completing the template is conducted by two researchers on the team with the intention of reducing bias in the results. By including two researchers in this process, we could comprehensively and consistently record the essential details of each study represented by each item. By standardizing data collection,

the possibility of omitting relevant information or selectively interpreting the results is minimized. In addition, the use of a template promotes research reproducibility. Consistent documentation of the details of studies facilitates the review and verification of results by other researchers. Having a clear and consistent structure simplifies the comparison of studies and identification of patterns or trends in the results. Finally, the results compiled in the template are presented to the entire research team to detect problems or doubts in the data collected.

2.9 Data analysis and classification

To analyze and classify the data from the primary studies, we used a hybrid strategy in which some items were collected with the metadata from the primary studies and others were collected based on specific classifications. Items I1, I2, I3, I4, I5, and I6 are collected by the metadata of each study; one researcher performed this process.

Regarding I7, we used the suggestion of Petersen et al. [10], which suggests classifying studies into research facets proposed by Wieringa et al. [11] In the following points, we summarize each facet.

- Validation research: This facet focuses on the validation and evaluation of existing theories, models or frameworks. It deals with empirical studies that aim to confirm or refute the validity and reliability of certain concepts and methodologies.
- Evaluation research: Consists of analyzing the effectiveness or impact of interventions, systems, or processes. It aims to determine whether a particular solution, approach, or system meets the research objectives and produces desired results.
- Solution proposal: This strand aims at research that presents new or improved solutions to practical problems or challenges. It considers aspects of the development of innovative approaches, methods, techniques or technologies to address specific issues in a given field.
- Philosophical paper: Studies that delve into theoretical or conceptual discussions and debates within a specific field of study. These studies explore fundamental questions, underlying assumptions, and principles, contributing to the theoretical basis of a field or discipline.
- Opinion papers: Describe subjective views, perspectives, or interpretations of a particular topic or issue. In addition, they provide personal views, reflections, or arguments based on the author's knowledge or experience and often stimulate discussion and debate.
- Experience papers: Experience papers focus on sharing practical experiences, lessons learned, and case studies on real-world applications. In turn, they provide valuable information on the challenges, success, and practical implications of applying specific approaches or solutions.

To classify the data for item I8, we used the classification of study contributions proposed by Kuhrmann et al. [7], which is described as follows.

- Model: A model is a simplified representation of a system, process, or a phenomenon. It describes the key aspects and relationships that provide a structured way of understanding and explaining complex concepts. These models can be used for analysis, prediction, or simulation.
- Theory: A theory is a systematic explanation of observed facts, phenomena, or relationships, based on rigorous research and testing. In addition, it provides a framework of principles, concepts, and hypotheses intended to explain and predict phenomena within a specific domain. Theories are typically derived from empirical data and can be tested and refined through further research.
- Framework: A framework is a conceptual structure or set of principles that provides a basis for organizing and understanding a particular field or problem. It provides a high-level structure for organizing concepts, processes, or components, and guides research, development, or decision-making.
- Guidelines: Guidelines are the recommendations or best practices derived from research findings and expert knowledge. They provide specific instructions and advice on how to approach a particular task, process, or problem. Alternatively, guidelines help guide decision making, inform practice, and improve outcomes in a specific context or domain.
- Lessons learned: Lessons learned refer to insights, experience, or knowledge gained through research or practical applications. They are often derived from an analysis of successes, failures, or challenges encountered in specific projects or initiatives. The lessons learned provided valuable information for making future decisions, avoiding problems, and improving outcomes.
- Advice: The advice consists of expert recommendations or suggestions based on research findings and knowledge. It provides guidance or opinions on specific actions or strategies to achieve the desired outcomes. Advice is often tailored to specific contexts or situations, and aims to support decision-making processes.

- Tool: A tool refers to a tangible or digital artifact developed as a result of research. It can be a software application, framework, algorithm, or instrument that facilitates specific tasks, processes, and activities. Tools are designed to help researchers, practitioners, and users achieve their objectives more efficiently and effectively.

The central idea of I9 is to segment the study into one of the topics of the autism spectrum. The aim of the above is to understand what approach to ADS the study addresses in order to better characterize the contribution described by the study. For this study, we used the following types of ADS to classify studies.

- Autism: It is a disorder that usually starts during the first three years of life, with the parents being the first ones who start to identify in their child behaviors different from children of the same age. Some of these strange symptoms are no or very little verbal communication, the child is very unsociable and solitary, or does not show interest in identifying objects or calling the parents' attention.

- Asperger's Syndrome: It is the most difficult and, sometimes, late type of autism to diagnose, because the affected persons do not have any kind of intellectual disability or physical trait that identifies them. The deficit is in the field of social skills and behavior, being important enough to seriously compromise their development and social and labor integration. Problems with social interaction, lack of empathy, poor psychomotor coordination, not understanding irony or the double meaning of language, and obsession with certain subjects are some of the most common characteristics of Asperger.

We selected these types of spectrum conditions as they compromise the motor skills of the human body to a lesser extent. Other spectrum conditions, such as Rett syndrome, directly affect an individual's motor and cognitive impairments from an early age, making it impossible for them to hold professional positions.

For items I10, I11, and I12 two researchers from our team performed data extraction. Both researchers read the paper and discussed their findings. For facilitator and barrier identification, we used thematic analysis as a method of qualitative data analysis that focuses on reading a data set (e.g., papers) with the aim of identifying patterns of meaning in the data in order to derive themes [2].

Thematic analysis involves an active process of reflexivity in which the subjective experience of the researcher plays a key role in data interpretation. In qualitative research, thematic analysis is used to analyze qualitative data, that is, data relating to opinions, thoughts, feelings, and other descriptive information. Because the aim of our study is to analyze Software Engineering from a more social point of view, thematic analysis allows us to examine a dataset containing multiple qualitative sources and extract the overarching themes that run through the entire dataset.

Given that the analysis of the papers can be volatile (i.e., some papers can easily deliver direct information and others require methodological thought), we have defined three weekly sessions in which we analyze a maximum of ten papers, in order not to avoid overwhelming the researchers' analytical capacity. These sessions will be repeated until there are no more papers to be reviewed. Finally, the results of these items are presented to the research team, and each item with doubts or observations is analyzed.

3 Dissemination of results

In this section, we describe our plan for the publication of the results.

- The main results will be published in a journal (WoS, Q1) specialized in software.

- We will publish a repository where we will describe the review protocol and the results obtained in order to promote the replication of our study.

- Based on the results of this review, we will propose a methodology that can include people with ASD based on the identification of skills between ASD and non-ASD people that can be mapped to everyday academic and professional life situations.

- We will conduct an empirical study to validate our proposal and publish intermediate results at conferences and the final results in a WoS Q1 journal.

References

[1] Libguides: Systematic reviews: Step 6: Assess quality of included studies, 2023.

[2] Virginia Braun and Victoria Clarke. *Thematic analysis.* American Psychological Association, 2012.

[3] Christopher Carroll and Andrew Booth. Quality assessment of qualitative evidence for systematic review and synthesis: is it meaningful, and if so, how should it be performed? *Research synthesis methods*, 6(2):149–154, 2015.

[4] Emma Costello, Sara Kilbride, Zoe Milne, Paul Clarke, Murat Yilmaz, and Silvana Togneri MacMahon. A professional career with autism: Findings from a literature review in the software engineering domain. In *Systems, Software and Services Process Improvement: 28th European Conference, EuroSPI 2021, Krems, Austria, September 1–3, 2021, Proceedings 28*, pages 349–360. Springer, 2021.

[5] Vahid Garousi, Michael Felderer, and Mika V Mäntylä. Guidelines for including grey literature and conducting multivocal literature reviews in software engineering. *Information and software technology*, 106:101–121, 2019.

[6] Maico Krause and Macilon Araújo Costa Neto. Systematic mapping of the literature on mobile apps for people with autistic spectrum disorder. In *Proceedings of the Brazilian Symposium on Multimedia and the Web*, pages 45–52, 2021.

[7] Marco Kuhrmann, Philipp Diebold, and Jürgen Münch. Software process improvement: a systematic mapping study on the state of the art. *PeerJ Computer Science*, 2:e62, 2016.

[8] Anna Beatriz Marques and Leandro da Silva Monte. How are software technologies being evaluated with autistic users? a systematic mapping. *Universal Access in the Information Society*, 21(3):587–597, 2022.

[9] Meredith Ringel Morris, Andrew Begel, and Ben Wiedermann. Understanding the challenges faced by neurodiverse software engineering employees: Towards a more inclusive and productive technical workforce. In *Proceedings of the 17th International ACM SIGACCESS Conference on computers & accessibility*, pages 173–184, 2015.

[10] Kai Petersen, Robert Feldt, Shahid Mujtaba, and Michael Mattsson. Systematic mapping studies in software engineering. In *12th International Conference on Evaluation and Assessment in Software Engineering (EASE) 12*, pages 1–10, 2008.

[11] Roel Wieringa, Neil Maiden, Nancy Mead, and Colette Rolland. Requirements engineering paper classification and evaluation criteria: a proposal and a discussion. *Requirements engineering*, 11:102–107, 2006.

[12] Claes Wohlin, Per Runeson, Martin Höst, Magnus C Ohlsson, Björn Regnell, and Anders Wesslén. *Experimentation in software engineering.* Springer Science & Business Media, 2012.