



Doctoral Thesis

Submitted in partial fulfilment of the Lancaster University Doctorate in Clinical Psychology

**Mental Health and Deafness – Factors Associated with Psychological Well-Being and
Symptom Presentation in Deaf Populations**

William de Gaunza

Doctorate in Clinical Psychology

Division of Health Research

Lancaster University

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Statement of Total Word Count

Section	Main Text	Appendices (including tables, figures, and references)	Total
Thesis Abstract	(299)	-	-
Literature Review	7993	7966	15959
Empirical Paper	7999	6271	14270
Critical Appraisal	3918	1930	5848
Ethics Proposal	5966	6704	12670
Total	25876	22871	48747

Abstract

The term *deaf* (lower case) describes someone who has severe audiological problems. People who have a strong Deaf cultural identify and use their national sign language, identify themselves as a cultural and linguistic community, distinguished by using *Deaf* (uppercase). The sections within this thesis generally adopt the term *deaf* to incorporate a wide understanding of people who are currently experiencing deafness.

Section one presents a mixed methods systematic literature review identifying how symptoms of schizophrenia spectrum disorders (SSD) present in prelingually deaf people. Five databases were systematically searched, and 21 studies were included in a narrative synthesis. Findings highlighted that symptoms of SSD may present differently in prelingually deaf populations. It may be more difficult to separate delusions and hallucinations in prelingually deaf SSD and language deficits may be seen with or without thought disorder. The review identified that there is a small, but dedicated evidence base which requires attention from more methodologically rigorous research in the future.

Section two details an empirical investigation of the relationship between intimate partner violence (IPV) victimisation, adult attachment style, early language experiences, and psychological wellbeing in deaf people. Participants (N = 63) completed an online survey comprising of self-report measures. High levels of IPV were reported in the sample. Hierarchical regression models of IPV, attachment style, and early language experiences did not significantly predict well-being, although attachment avoidance was positively associated with IPV victimisation. Small sample size increased the likelihood of type II error. Discussion of the results considered that the unique language experiences and communication needs of deaf populations are likely to represent a range of factors that influence the power imbalances within IPV victimisation.

Section three includes a critical appraisal, which highlights some of the practical, ethical, and methodological issues encountered throughout the development of sections one and two.

Declaration

This thesis documents research undertaken for the Doctorate in Clinical Psychology at the Division for Health Research, Lancaster University. The work presented here is the author's own, except where due reference is made. The work has not been submitted for the award of a higher degree elsewhere.

Name: William de Gaunza

Date: 27.07.2023 (with corrections: 30.10.23)

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Section One: Systematic Literature Review

Symptom Presentation of Schizophrenia Spectrum Disorders in the Prelingually Deaf –
a Mixed Methods Review

William de Gaunza

Doctorate in Clinical Psychology

Division of Health Research

Lancaster University

All correspondence should be sent to:

William de Gaunza

Doctorate in Clinical Psychology

Lancaster University

Health Innovation One

Sir John Fisher Drive

Lancaster University

LA1 4AT

Email: w.degaunza@lancaster.ac.uk

Prepared for the International Journal on Mental Health and Deafness. Author guidelines are included in Appendix B.

Abstract

Objective: This systematic review aimed to identify how symptoms of schizophrenia spectrum disorders (SSD) present in prelingually deaf people. **Methods:** Studies were identified by conducting a sensitive search of the databases: APA Psychinfo, CINAHL, Medline Complete, Web of Science, and EMBASE. Search results were assessed for inclusion against eligibility criteria and full-text articles were citation searched forwards and backwards. Both qualitative and quantitative studies were included. **Results:** 21 studies were included in a narrative synthesis. There is evidence that some symptoms of SSD may present differently in prelingually deaf populations than in hearing populations. Auditory hallucinations were reported and described most frequently, although it may be more difficult to separate delusions and hallucinations in prelingually deaf SSD. Visual hallucinations may be reported more frequently in deaf SSD research than found in hearing SSD. Language deficits may be seen with or without thought disorder in prelingually deaf people with SSD. **Conclusions:** Clinicians should be aware of the differences and similarities when assessing and treating prelingually deaf people with SSD. There is a small, but dedicated evidence base which requires attention from more methodologically rigorous research in the future.

Keywords: Deafness, schizophrenia, psychosis, symptom

The first five years of a child's life is a crucial period of social and cognitive development, which includes the critical period for language acquisition.^{1,2} People who are born deaf or become deaf during this period are prelingually deaf. Prelingually deaf children are likely to have some disruption to their language development as they have limited access to spoken language, and their parents may not know sign language at the time of birth.³ A lack of exposure to adequate, high quality, sign language during these periods can result in linguistic deficits.⁴ In its extremity, a lack of exposure to adequate language can result in language deprivation syndrome.⁵ People with this condition may present with linguistic defects in their language, problems with theory of mind, and problems with emotional regulation.^{6,7} Although not every prelingually deaf person will have language deprivation syndrome, the experiences of deaf children in a hearing world are likely to result in impaired language development. Even with the introduction of newborn hearing screening programmes and the advent of cochlear implantation, signs of language deprivation in prelingually deaf people have persisted.⁸

Sign languages are syntactically and grammatically distinct from other languages; as a result, sign language users have challenges accessing health information and services. For example, they experience a range of linguistic, procedural, and cultural challenges when accessing written psychological self-report measures.⁹ Poor access to appropriate communication and a lack of deaf awareness in hearing communities can have significant impact on the physical and psychological needs of those deaf people who use sign language.¹⁰ And deaf people may decline access to GP services for fears around their communication needs.¹¹ In addition, there is an increased risk that deaf people will require treatment for mental health problems (entailing need for specialist services).¹²⁻¹⁴

Schizophrenia spectrum disorders (SSD) are some such mental health problems. SSD are characterised by diverse psychopathology with core features being positive symptoms (e.g. delusions, hallucinations, thought disorder), negative symptoms (e.g. impaired motivation and social withdrawal), and cognitive impairments.¹⁵ In hearing populations, auditory verbal hallucinations are the most common to be experienced in schizophrenia.¹⁶

Schizophrenia spectrum disorders and deafness

Assessing and understanding the symptoms of SSD in prelingually deaf psychiatric populations may be particularly difficult given the comorbidity of language dysfluency. Within psychiatric inpatient populations, 66% - 75% of deaf people are not fluent in any language.¹⁷ Therefore, these presentations may have markedly different meaning in prelingually deaf cases. Language dysfluency may also impact deaf people's theory of mind development and emotional recognition.¹⁸⁻²⁰ This could be conflated with SSD symptomology as social cognition is also affected in non-deaf SSD.^{21,22}

SSD are thought to be present at similar rates in deaf and hearing populations,²³ although some studies have estimated that SSD may be less prevalent in deaf populations,¹⁷ whereas others have found higher rates.²⁴ It may be difficult to obtain an accurate understanding of the prevalence of SSD in the deaf population as difficulties in deaf people accessing health services might result in only the most disordered patients being identified. Conversely, without specialist clinical interpretation of deaf patients, aspects of language dysfluency may be conflated with SSD symptomology.²⁵

Literature reviews of deafness and SSD are generally either significantly out of date or lack systematic rigour. Cooper²⁶ reported that the mode of action of deafness in paranoid symptoms were likely to be related to psychological factors such as impact on

personality development, social and psychological reactions to deafness, and impacts on neuropsychological processes such as attention. This review may now be considered dated (over 40 years ago), and the literature base has developed significantly in the understanding of both deafness and SSD.

Glickman²⁵ highlighted the problems with assessing SSD in prelingually deaf people, specifically in relation to language dysfluency. They discussed the difficulties in assessing the aetiology of language dysfluency in this population, given that dysfluency may present because of language deprivation, psychopathology, and organic pathology. Glickman²⁵ provided guidelines for clinicians assessing prelingually deaf people with SSD. Trumbetta et al.²⁷ narratively reviewed language related symptoms in the prelingually deaf SSD population, concluding that it is likely that similar language atypicality's are found across hearing and signing deaf populations.

Linszen et al.²⁸ conducted a meta-analysis identifying an increased risk of psychosis in patients with hearing loss. Although hearing loss populations are likely to represent a range of common features, those with prelingual deafness represent a distinct population with a spectrum of difficulties different to those experienced by those with hearing loss later in life. Linszen et al.²⁸ did not include age of onset or severity of hearing impairment as a factor in their meta-analysis.

Tripp and Halder²⁹ conducted a systematic review focussing on the modality and content of hallucinations in prelingually deaf people with SSD. They identified several studies which focussed on the conceptualisation of auditory verbal hallucinations in prelingually deaf people with SSD. They found that the rank order of hallucination modalities was like that of hearing populations with auditory hallucinations most reported, followed by visual hallucinations, tactile, and somatic. However, they noted

that there were much higher levels of visual hallucinations reported in deaf SSD than in hearing SSD research.

There is a body of research addressing the symptomology of SSD in hearing populations which identifies several prominent features. There are clear difficulties in conceptualising and assessing these features in prelingually deaf populations. Early life experiences of this population may result in difficulties with language dysfluency, delayed social cognition and decreased social networks. These difficulties may represent a unique challenge in understanding the aetiology of such mental health problems and prelingual deafness in combination. Previous reviews have found that there are difficulties in conceptualising and assessing SSD in deaf populations, particularly regarding the content and modality of hallucinations and delusions. However, there has been no recent, systematic review pulling together the literature regarding the presentation of SSD in the prelingually deaf population. Previous attempts have also lacked the necessary methodology or focus to comprehensively address this topic.

The primary aim of this review was to systematically review and synthesise the existing scientific knowledge concerning SSD symptomology in prelingually deaf adults. As such it aimed to answer the following question: How do symptoms of SSD present in prelingually deaf populations? This will allow relevant clinicians to better identify and assess SSD in prelingual deafness.

Method

We conducted a systematic review and narrative synthesis of eligible studies according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement.

Search strategy

Studies were identified using a systematic sensitive search strategy of electronic databases; searches were completed on the 10th of February 2023. Five databases were included: PsycINFO, MEDLINE Complete, CINHALL, Web of Science, and EMBASE. Subject terms and key word searches related to each of the areas of “schizophrenia spectrum disorders” and “deafness” were combined through the Boolean operators “AND” and “OR” across each database individually. Wildcard symbols (such as “*”) were used to capture variations in phrasing or spelling of key terms. Full search strings for each database can be seen in Table 1.

INSERT TABLE 1 HERE

Screening and selecting

Research studies were included if they used a quantitative or qualitative design, including cross-sectional correlational designs, experimental designs, retrospective analysis of quantitative data, observational studies, or other qualitative analysis. Studies may have used other quantitative or qualitative design, providing it reported the necessary data to be included in the narrative synthesis. Non peer reviewed research studies were excluded. Full eligibility criteria are set out in Table 2.

INSERT TABLE 2 HERE

Studies were screened and assessed for eligibility by one reviewer and 1501 records were identified from database searches. These records were uploaded to the systematic review software CADIMA¹³⁰ for screening and selection. Duplicates were identified through an automatic function in CADIMA and verified by a reviewer. Following duplicate removal 1025 records were reviewed against eligibility criteria at the level of title, where 763 records were removed, and then at the level of abstract, where a further 203 records were excluded. The remaining 55 full text records were assessed for eligibility, these were read and re-read by the reviewer. Following the full text review, 35 records were excluded, full details can be seen in Figure 1.

Twenty full-text records were identified as appropriate for the review. The reference list of each of these records were then citation searched forwards and backwards where a further two records were identified and screened against inclusion criteria. One of these records was removed as no full text was available, one record was deemed suitable to be included in the review. A total of 21 records were included

INSERT FIGURE 1 HERE

Quality assessment

Quality appraisal was carried out using the Quality Assessment with Diverse Studies (QuADS) appraisal tool.³¹ The QuADS is specifically designed to appraise a wide range of studies simultaneously and critically. It encompasses multi-method or mixed methods designs and scores each study to the degree which they meet thirteen

¹ A free web tool facilitating the conduct of systematic reviews, systematic maps, and further literature reviews.

criteria across a four-point scale (0-3) (see Appendix A). Studies were not excluded based on a low QuADS score and the appraisal tool does not suggest the use of cut-offs for quality appraisal. However, papers were reviewed with reference to their quality score. QuADS scores were also used to give an overview of the literature in general, examining for consistent strengths and weaknesses across papers and evidence was weighted according to the quality indicators.

QuADS criteria were applied by one reviewer for all papers selected for inclusion. A sample of four studies were second rated by an independent researcher and a process of supervision was available in the case of significant disagreement in ratings. The two reviewers initially discussed how criteria would be applied before independently scoring two papers. Scores were discussed and a consensus agreed before applying scoring the remaining two papers, rating was then discussed further, and consensus agreed with differences in ratings. 48 of 52 ratings were consistent between the raters. A weighted kappa statistic ($\kappa = .94$) was obtained and this was considered a suitable level of inter-rater reliability.³²

Data Extraction

CADIMA was used to extract data from the 21 included papers. These included study characteristics, year of publication, author(s), journal name, country where the study took place, study design, participant characteristics, type of intervention or comparator groups, instruments used, results, findings, recommendations, and quality scores.

Data analysis

The aim of the review was not to statistically combine standard effect sizes of studies, but instead to textually describe the overall effect of the variations in study

characteristics. The review aimed to identify a range of quantitative and qualitative study designs which include a range of outcomes, as a result it was considered that the data would be too heterogeneous to conduct a meta-analysis. Therefore, a narrative synthesis approach was more appropriate to answer the review question. Narrative synthesis relies primarily on the use of words and text to summarise and explain the findings of the synthesis. In particular, guidance by Popay et al.³³ regarding the use of narrative synthesis was consulted. The narrative synthesis approach was chosen to gain a greater value as whole than from single disparate studies to identify the how SSD symptomology presents in prelingually deaf populations.

Results

Of the 21 studies included, nine were quantitative.³⁴⁻⁴² Ten were case study designs.⁴³⁻⁵² Two studies were qualitative in design.^{53,54} One group of records^{35-38,42} used the same sample to report five studies. Table 3. shows a summary of study characteristics.

INSERT TABLE 3 HERE

Quality appraisal

Total QuADS scores identify that there is great variability between studies in terms of quality. Many of the case study designs had lower QuADS scores, the rating of individual QuADS items highlights that this is often related to poor justification of the design and a lack of transparency about the aims of the study, data collection, data analysis, and consideration of theoretical rationale. Where appropriate, results are

discussed with reference to their quality appraisal. Cross tabulation of all QuADS items for each study can be seen in Table 4.

INSERT TABLE 4 HERE

Symptom structure

The only study to assess overall symptom structure was Horton and Silverstein³⁸ who conducted a confirmatory factor analysis of the Brief Psychiatric Rating Scale (BPRS)⁵⁵ as well as exploring relationships between the factor analysis, cognition and social cognition. However, the confirmatory factor analysis reported in this study is of a mixed hearing and deaf sample and does not report a BPRS symptom structure for a solely prelingually deaf population. The sample was split into hearing and deaf groups for relationships between symptoms and domains of cognition and social cognition. These are synthesised in the relevant sections below.

Hallucinations

Nine papers addressed hallucinations to some extent.^{39,44-48,50,51,53} Seven of these studies were qualitative in design: three single case studies,^{46,48,51} three multiple case study designs,^{44,45,47} and one phenomenological analysis.⁵³ One study was quantitative using a factor analysis³⁹ and one study used mixed methodology, case presentation and descriptive statistics.⁵⁰

Modality. The hallucinatory modalities of each study are presented in Table 5. Prevalence of each hallucinatory modality was calculated as a percentage across all studies, except Atkinson et al.³⁹ as their study aimed only to address auditory hallucinations and did not report other modalities and the inclusion of these would skew

the descriptive statistics. Auditory hallucinations appeared most with 59.09% of participants experiencing them, followed by visual (50.91%), tactile (21.82%), olfactory (10.91%), and gustatory (.91%). The rank order of these modalities (i.e. that auditory hallucinations are the most common, followed by visual and then tactile) is similar to hearing SSD research.⁵⁶ However much higher rates of visual and tactile hallucinations were reported in prelingually deaf people across several studies.^{39,45,50,53} The higher prevalence of auditory, visual, and somatic hallucinations in the prelingually deaf was discussed across several studies in this review. The relative enhancement of visual and tactile hallucinations was suggested to relate to the deaf sensory experience and communication modality.^{47,50} The conceptualisation and nature of auditory hallucinations was a focus within these studies.

INSERT TABLE 5 HERE

Content. The content of hallucinations for each study is summarised in Table 6. There is a theme of religious and persecutory content across a range of hallucinatory modalities, particularly auditory hallucinations. Visual hallucinations shared some similar themes. It was apparent across four studies that visual hallucinations related specifically to visual forms of communication, including sign language and lip reading.^{44,45,47,50} Schonauer et al.⁵⁰ noted that visual hallucinations containing ‘visual communication’ was not reported enough within their sample to explain the elevated number of visual hallucinations. They suggested that hallucinations of visual communication could be considered as first rank symptoms⁵⁷ because their form is based in language. Atkinson et al.³⁹ similarly reported the possibility that many prelingually deaf people with SSD who report visual phenomena are actually

experiencing subvisual precept of voice rather than a true primary visual hallucination. Critchley et al.⁴⁵ noted within the discussion of their results that it was difficult to fully conceptualise the differences between hallucinations and delusional experiences in the prelingually deaf. They concluded that the concept of ‘auditory’ hallucination meant no more than ‘receiving meaningful information’.

Matsumoto et al.⁴⁶ suggested that although their deaf participant showed differences in the form and content of hallucinations, they were effectively treated with medication which they suggest might indicate a similar aetiology of hallucinations in deaf and hearing people with SSD. Although this was a single case study, and this suggestion cannot be generalised.

In their phenomenological analysis, Du Feu and McKenna⁵³ suggested that auditory hallucinations present a similar breadth of attributes in prelingually deaf people as in hearing populations. They reported that the phenomenon of auditory verbal hallucinations was not confined to those who became deaf after speech would normally be developed. However, Atkinson et al.³⁹ conducted a unique factor analysis using sign language derived statement cards. They found that no congenitally profoundly deaf participants reported being able to ‘hear’ auditory voices. Instead, they found these participants loaded on to a factor of non-auditory voices, with subvisual perception of voice articulations in the mind’s eye. Atkinson et al.³⁹ also found that participants’ experiences of auditory hallucinations mapped closely onto their hearing experiences, with those who had some experience of hearing speech loading onto factors of ‘auditory voices’ or ‘mixed perception and uncertainty about how voices are perceived’.

Matsumoto et al.⁴⁶ and Morris et al.⁴⁷ also found evidence to support this idea. They noted that those with late or incomplete language acquisition did not show clear

auditory characteristics. One of the auditory characteristics that was described within the literature was the volume of the auditory hallucinations. Schonauer et al.⁵⁰ noted that this is one characteristic of auditory experience which could be experienced through cutaneous sense by prelingually deaf people.

INSERT TABLE 6 HERE

Assessment. One difficulty noted within the literature is the differentiation between hallucinations and other symptoms or phenomena related to SSD, particularly delusions. Critchley et al.⁴⁵ reported that it was not possible to separate the delusional aspects fully from the hallucinations. Similarly, du Feu and McKenna⁵³ reported that some of their participants made potentially delusional claims about their hearing. Briffa⁴⁴ noted the difficulty in comprehending and assessing auditory hallucinations in prelingually deaf people without a full understanding of the severity of their deafness, which varies within the deaf population. However, this study also had significant methodological flaws and only snapshots of case studies were provided. In several studies the assessment of hallucinations was hampered by difficulties in understanding and communicating with deaf people with SSD.^{44,48} Deaf people hold their own understanding of their hallucinatory experiences, but the application of traditional, hearing focussed, interviews impede participants' ability to share this understanding,³⁹ and are likely to misrepresent symptoms.⁴⁸

Delusions

In total, seven papers addressed delusions to some extent.^{43,45,47,49,51-53} All of these papers were qualitative in methodology, with three single case study

designs,^{43,51,52} three multiple case study designs,^{45,47,49} and one phenomenological analysis.⁵³

Content. Thematic content of delusions for each study is displayed in Table 7. Themes of delusions included religious persecution and ideas of reference,^{45,51} persecution from family or neighbours,⁴⁵ persecution from unknown persons,⁴⁹ delusions relating to alien abduction and language⁴³ and grandiose delusions of special knowledge or abilities.⁴⁷ Additionally, du Feu and McKenna⁵³ noted possible delusional content relating to the hearing status of their participants when assessing auditory visual hallucinations. There is limited analysis above a descriptive level of these experiences, most of the studies are descriptive case studies and lack the depth of analysis and sample size to meaningfully explore the content of delusions in the deaf population.

Morris et al.⁴⁷ scored higher on QuADS criteria than other studies focussing on delusions. Their thematic analysis identified common themes of victimisation, being targeted, and disadvantaged. They identified that specific experiences of deafness influenced the themes and content of delusional beliefs, such as being caught between two worlds (hearing and deaf worlds), acceptance of deafness as a negative state, disability, and language factors. Sub themes characterised a sense of powerlessness, communication barriers, misfit of identity, and isolation which were echoed in the experiences of the participants who experienced persecutory delusions. These were specifically in relation to their status as a d/Deaf person. Similar concepts were identified in other studies. Thylur et al.⁵¹ noted that their participant was experiencing delusions of persecution that were attributed to their status as a Deaf person and their religious beliefs. And the participant was experiencing a sense of isolation that was attributed to the marginalisation experienced by some deaf people. Other delusional

experiences noted by Morris et al.⁴⁷ included delusions of grandeur related to having special abilities regarding inventions and superior knowledge in relation to others. These were noted in the context of the participant being grouped with other deaf individuals who they perceived as having lower communication proficiency. The small sample sizes and lack of in-depth analysis in most studies addressing delusions mean that it is not possible to confirm if these themes are represented fully in the other studies addressing delusions in this review. Although, du Feu and McKenna⁵³ did describe possible delusions relating specifically to hearing modality, noting that several participants claimed to be able to hear when asked about their auditory hallucinations. These experiences included participants denying that they were deaf and believing that their hearing had been restored by God.

Du Feu and McKenna⁵³ noted that, similar to other SSD populations, it was not always possible to separate hallucinatory experiences from delusions. However, studies also identified a range of difficulties with the assessment of SSD in deaf populations, particularly by hearing clinicians. Weiler et al.⁵² encountered difficulties assessing delusions through written communications, where misunderstandings relating to language dysfluency and social deficits could also explain the participants' presentation. Thylur et al.⁵¹ reported that the use of skilled sign language interpreters was instrumental in characterising their participants' sociocultural background and religious beliefs separately from their symptoms of SSD. This suggests that sign language interpreters with a strong knowledge of Deaf culture may be important for the assessment of Deaf people with SSD. Especially when they can help differentiate between symptomology and other aspects of prelingual deafness such as language dysfluency and sociocultural aspects of Deaf culture. Similarly, Anglemeyer and Crespi⁴³

described the process of using sign language assessment to support the changing of a diagnosis from schizophrenia to delusional disorder. It is also noteworthy that several of these studies are taken exclusively from inpatient services.^{43,47,51,52} Anglemyer and Crespi⁴³ noted that inpatient treatment tends to be short term, and that long term follow up is necessary for thorough assessment of SSD in deaf populations.

INSERT TABLE 7 HERE

Thought disorder

Four papers (all qualitative) addressed thought disorder to some extent.^{44,51,52,54} Thacker⁵⁴ conducted a descriptive analysis with 30 deaf participants and all others were single case study designs.^{44,51,52}

Thacker⁵⁴ was the only study to focus mainly on thought disorder. They used interviews based upon the Present State Examination (PSE)⁵⁸ to analyse the presentation of thought disorder in deaf participants. They found many similarities between thought disorder in hearing and deaf samples in relation to the parameters set out in previous research.⁵⁹⁻⁶² Thacker⁵⁴ reported that abnormalities in thought were evident in sign language at the levels of discourse, syntax, and analogue of phonology. They noted that anomalous use of sign based on spatial factors was a particular difference between hearing and deaf signers with SSD. Notably, a participant identified their right side with themselves and their left side with a family member. They also found paraphasia in forms unique to signing, including reverse finger spelling and errors in the spatial location of signs. Thylur et al.⁵¹ also reported the presence of paraphasia in their case study in the form of neologisms; crucially these were noted not to be home

signs (idiosyncratic gestures that were developed inside of a caregiver's home) by the participants' family. Evidence of thought disorder has also been noted outside of sign language, the participant in Briffa's case study⁴⁴ reported racing intrusive thoughts to the extent that the participant had headaches. Weiler et al.⁵² noted that the participant wrote notes which were hard for staff to understand, and these could have been attributed to disordered thinking. An example of this is:

"I was mad past almost. I am saw wierd sic people mad. I knew. I think Black Ago face on fact Mad. I know born way problem Black Crazy people war fight longer Stop Mad."

This could be viewed as an example of derailment in the context of thought disorder, which Thacker⁵⁴ identified as present in prelingually deaf signers with SSD. However, Weiler et al.⁵² also noted that this participant had a mixed receptive-expressive language disorder, and they considered that language dysfluent deaf people may lack time referents in their communication and formal grammar and spatial organisation is used incorrectly. Weiler et al.⁵² also commented that non-psychotic language dysfluent deaf patients do not display incongruent emotional expression and communication is organised around a theme, whereas psychotic communications are loosely associated. But this was based on their single case study design, which is not generalisable. However, Thacker⁵⁴ also noted perseveration at the thematic level in sign language in prelingually deaf people with thought disorder. There is, therefore, no clear consensus between the small number of studies addressing thought disorder in prelingually deaf people with SSD. The studies also lack a level of methodological rigour, as identified by QuADS scores, with a high number of single case study designs and descriptive analysis which is not adequately described and results which are noted to be 'preliminary'.

Thacker⁵⁴ suggested that the evidence from their study shows that thought disorder does present in SSD's regardless of communication modality. They also suggested that the term 'communication disorder' more fully and accurately described the phenomena as it presents through a range of communication modalities and is likely to involve a psychological function under which language is subsumed. There is some consensus across the studies that the individual's experience of language is considered when assessing thought disorder in prelingually deaf people with SSD. This is due to the inherent differences between sign languages, spoken languages and the high possibility that language dysfluency can be misinterpreted as thought disorder or other psychiatric symptoms.^{44,51,52}

Cognition and language

Seven papers addressed areas of cognition and language in relation to SSD in prelingually deaf people.^{34-38,41,54} All papers were quantitative in nature, with the exception of Thacker.⁵⁴ Horton and Silverstein^{35,37,38,42} and Horton³⁶ are analyses from the same sample.

Horton and Silverstein³⁸ considered aspects of cognition (visuospatial memory, early visual processing, and sustained attention) in relation to their factor analysis of the BPRS, which found that, in their deaf sample, cognition was associated with items relating to negative symptoms (anergia). Whereas in hearing populations, cognition was more strongly associated with disorganisation. However, this study used a small sample size of 65 participants, limiting the generalisability of these results.

Perceptual organisation, disorganised symptoms, and language. Horton and Silverstein³⁷ found that prelingually deaf people with SSD displayed increased context sensitivity to a visual illusion of shape size than hearing participants with SSD in the

Ebbinghaus illusion (a perceptual phenomenon where the perceived size of a central target object is affected by the size of surrounding inducers), indicating the possibility of greater visual integration in deaf participants. When analysed separately, deaf participants with higher than mean levels of disorganisation showed less context sensitivity than those with lower levels of disorganisation in their symptom presentation. This suggested that disorganisation does correlate with some level of impaired visual integration in deaf people with SSD but may not be to the same extent as in hearing populations. Horton and Silverstein³⁸ also reported strong correlations between early visual processing and activity symptoms as measured by the BPRS, specifically tension and motor hyperactivity. Horton and Silverstein³⁵ also noted that it is important to consider the linguistic and non-linguistic components of visual-spatial processing. They found that visual spatial tasks considered as non-linguistic (image based) were stronger predictors of functional outcome in deaf participants with SSD, whereas linguistic (English word) based tasks of visuospatial processing were stronger predictors in hearing people with SSD. They noted that the traditional method of discerning linguistic from non-linguistic cognitive tasks are challenged in this population as their 'verbal' communication is visuospatial.

Deaf participants with SSD displayed linguistic deficits which are unique to sign languages. Chatzidamianos et al.³⁴ found that production of classifiers (a reference tracking device with few, if any parallels in spoken language) was impaired in deaf participants with SSD. They also found that sign language handshape production was significantly worse in deaf participants with SSD; but orientation, movement and location did not differ from healthy deaf controls. Thacker⁵⁴ noted incorrect or stereotyped hand gestures which they considered in the context of paraphasia in thought

disorder. However, the sample in Chatzidamianos et al.³⁴ excluded participants if they were considered to present with formal thought disorder (FTD), suggesting that the impairment in classifier and hand shape production may be linked to other processes in SSD.

Horton³⁶ found that linguistic ability was positively and significantly associated with concurrent functional outcome above the contribution of measures of cognition and social cognition, although cognitive measures were limited to word memory, visuospatial memory, early visual processing, and vigilance; there was also no long term follow up on functioning. Sign language fluency was positively associated with early visual processing, which is noted as a linguistic cognitive task, but this was reduced to a trend once severity of SSD was controlled. Although, age of sign language acquisition was not associated with any of those four cognitive domains, which they suggested might be explained by unknown confounds related to SSD or measurement error.

Schonauer et al.⁴¹ studied the differences in lip reading as a task that requires enhanced levels of attention and information processing between prelingually deaf and hearing samples of people with SSD and control groups. They found that lip reading skills were impaired in SSD groups relative to controls and that prelingually deaf participants performed significantly better on lip reading tasks than hearing participants. However, there was no significant two-way effect, suggesting that deaf and hearing SSD participants were similarly impaired in the ability to lip read. They suggested that prelingually deaf participants may have different strategies when it comes to lip reading given their primary visual mode of communication and reduced lexicon.

Social cognition

Four quantitative studies addressed social cognition.^{36,37,40,42}

Recognising emotions in others. Kubota et al.⁴⁰ found that prelingually deaf participants with SSD performed significantly worse than hearing participants with SSD when identifying affective facial expressions in others. The authors suggest that facial affect processing is differently impaired in prelingually deaf people with SSD in relation to hearing people with SSD and healthy controls in the sense that prelingually deaf people may be less able to infer affect from facial expressions. Horton and Silverstein³⁷ identified that sensitivity to discriminating emotion in faces was positively related to affective and activity symptoms as measured by the BPRS. They found that higher levels of mood disturbance (anxiety, suicidality, depression, and guilt) were associated with a heightened ability in facial affect processing. This relationship was not mediated by linguistic ability and suggests that affect processing may be associated with symptomology differently for deaf and hearing people with SSD. Notably, deaf participants were impaired relative to healthy controls and hearing SSD controls in recognising the emotion of anger and surprise.⁴⁰

Facial affect processing and theory of mind were found to mediate the effect of some non-linguistic cognitive domains on functional outcome in prelingually deaf people with SSD, but the same was not found for linguistic, or English, based cognitive processes,⁴² although these conclusions are drawn from a small sample size of 65 participants. These findings are different to hearing SSD participants where the cognition–outcome relationship was only mediated by theory of mind when the cognitive domain was linguistically based. Facial affect processing was also found as stronger, more consistent mediator in these relationships than theory of mind, whereas they were found to be equally effective in hearing participants with SSD. The authors suggested that the impact SSD has on cognitive domains which predict functional

outcomes are differently impaired in deaf than hearing participants with SSD through the mediating effects of social cognitive processes. However, Horton³⁶ noted that linguistic ability accounted for a greater amount of variance in functional outcome than composite cognitive and social cognitive variables, suggesting that the impact of SSD on linguistic ability is also an important factor in understanding symptom presentation in deaf populations. Notably, among deaf subjects, the two measures of facial affect processing (identification and discrimination) were not correlated as they were in hearing participants. A weak correlation was found between the discrimination of facial affect and linguistic ability, supporting the idea that the former may be processed in a fashion like the processing of grammaticised facial expressions (i.e., via the left hemisphere) rather than both tasks of facial affect processing being processed in the right hemisphere as they were posited in the hearing population.

Negative symptoms

One study directly described negative symptoms. Saha et al.⁴⁹ reported a single case study of a prelingually deaf person who predominantly presented with withdrawal from family, flattened affect, and possible catatonic features. There are difficulties with interpreting and synthesising the information from this study. The study returned a low QuADS score due to a lack of rationale, and methodological transparency. The authors also use language to describe the participants communication modality and their engagement with the mental health service in a way which could be seen as derogatory. We chose to include this study within the review to provide a comprehensive overview of the literature, but the results should be interpreted cautiously considering the critical appraisal of the study.

Discussion

In this review, the aim was to typify the expression of SSD symptoms in prelingually deaf people, with a view to providing some guidance for clinicians working with this group. Included studies varied in quality and a substantial portion of the literature focusses on single case descriptions. A summary of key differences and similarities between hearing and prelingually deaf SSD is provided in Table 8. A list of key considerations for clinicians assessing SSD in the prelingually deaf is provided in Table 9. Overall, the rank order of hallucinations in prelingually deaf populations is likely the same as in hearing SSD research⁶³⁻⁶⁵ with auditory hallucinations being the most reported, followed by visual, tactile, olfactory, and gustatory. In line with previous reviews of deaf SSD,²⁹ visual and tactile hallucinations were reported at a higher rate than in hearing SSD populations. The content of hallucinations was found to be like previous reviews, with themes of religious and sexual nature being the most reported. This review included one recent paper⁴⁶ which was not included in Tripp and Halder.²⁹ They included papers that this review did not due to them being inaccessible to the authors.

INSERT TABLE 8 HERE

INSERT TABLE 9 HERE

The concept of auditory hallucinations in prelingually deaf patients remains a debated and under researched phenomenon. There is no consensus as to whether these experiences constitute true auditory phenomena, particularly when it concerns auditory verbal hallucinations; although clinical descriptions describe a range of sound

characteristics in hallucinatory experiences of deaf people.⁶⁶ Support for the presence of pure auditory verbal hallucinations^{45-47,53} was drawn from studies which had methodological weaknesses. Presenting case histories from psychiatric interviews and using structured interview tools such as the PSE is likely to address symptomology from a hearing perspective. Glickman⁶ suggests that this inherently presents difficulties for the prelingually deaf patients. The concept of whether a deaf person 'hears' auditory hallucinations may not be adequately translatable to sign languages. Glickman²⁵ suggests that deaf patients, particularly those with language deprivation, may respond affirmatively to questions to cover up uncertainty or confusion. The studies included in this review shows a lack of ability for deaf participants to fully describe the qualities of auditory verbal hallucinations. Atkinson et al.'s³⁹ finding that the content of hallucinations relates strongly to the individuals' hearing experiences comes from the only study of hallucinations which demonstrates a methodology which is deaf-led. Their results did not find support for auditory verbal hallucinations being experienced by those who were congenitally deaf.

As in Tripp and Halder,²⁹ visual hallucinations were reported more than in hearing populations. It is again debated if the increased reporting of visual hallucinations in prelingually deaf populations is representative of true visual hallucinations or the possibility that they represent a sub-visual precept of communication as suggested by Atkinson et al.³⁹ In hearing populations, the content of visual hallucinations in SSD is noted to have personal relevance.⁶⁷ Therefore, the presentation of visual hallucinations which were deemed to have personal relevance to the participants^{45,47,48,53} would suggest that the content, at least at a thematic level, is congruent with that of hearing SSD research. In terms of the higher prevalence of visual

hallucinations, Schonauer et al.⁴¹ suggested that this is a result of the use of sign languages in deaf populations, but their own analysis reports several uncertainties about whether the reported visual hallucinations can be classed as true hallucinations or not.

There is evidence to suggest that different cognitive styles associated with cultural differences can influence the apparent prevalence of visual hallucinations.⁶⁸ This research suggests that cognitive styles relating to attentional and perceptual processes influence the prevalence of hallucinatory modalities in SSD. Bauer et al.⁶⁸ found that cultures that display greater perceptual context sensitivity^{69,70} are more likely to report more frequent visual hallucinations. Horton and Silverstein³⁷ found that deaf people with SSD showed increased context sensitivity in visuospatial organisation and, in line with Bauer et al.,⁶⁸ this might represent a similar process. However, the cultural differences noted in Bauer et al.⁶⁸ are speculated to be rooted in historical, sociological, and socioeconomic factors,⁷¹ whereas the differences in perceptual organisation in the prelingually deaf are typically seen as a result of cerebral organisation in the face of auditory deprivation.⁷²⁻⁷⁴ Culturally Deaf people with SSD may show similar cognitive markers to those cultures which also display higher rates of visual hallucinations, but it's not clear if these aspects represent the same processes.

Delusions were found to share similar themes as in hearing populations.⁷⁵ Persecutory^{43,45,51,52} and grandiose^{45,47,53} were the most represented. However, delusional themes represented experiences unique to the prelingually deaf, including persecution for their status as a deaf person⁴⁷ and a possible delusional experiences of hearing being reinstated by religious figures.⁵³ Apart from Morris et al.,⁴⁷ methodology of analysis was not adequately described. It is possible that the studies could be affected by a high rate of bias in terms of identifying and reporting deaf specific delusional

content and underreporting that which would be considered usual within other SSD populations. Single case presentations are often chosen to highlight the differences or unusual aspects of a case.⁷⁶

Negative symptoms were underrepresented in the literature. Negative symptoms are relatively hard to assess^{77,78} and this could lead to more focus on positive symptoms in the literature. Also, the literature in this review is overwhelmingly focussed on inpatient populations when cases of SSD are more likely to present with acute positive symptoms.⁷⁹ Negative symptoms are often present at clinically high risk periods or during prodromal phases of SSD.⁸⁰ It could be that this period is not as easily noticed in prelingually deaf groups due to the barriers to healthcare that prelingually deaf people are known to face including communicating with healthcare professionals.

The assessment of many mental health problems are conducted by or through communication and language.⁸¹ Medical signs for SSD, such as disordered thinking, rely on the observation of a patient's language or lack thereof.⁸² Language deprived deaf people may display difficulties with language production which mimic the errors of language seen in thought disorder.^{25,83} Even when the deaf person has a known communication disorder, the distinction between SSD symptomology and language dysfluency is not always clear.⁵² The available evidence for the presentation of thought disorder in prelingually deaf people is very limited. The studies highlight that thought disorder in deaf people may have similarities to hearing populations, but some presentations are unique to the visual modality of communication. No studies have comprehensively controlled for language deprivation. But prelingually deaf people are heterogeneous and there can be extremely wide variability in the developmental experiences of deaf people which can lead to huge variability in the presentation of

dysfluency related to deprivation of language.⁸⁴ Glickman²⁵ suggests several ways to help support the clinician to make a differentiation between dysfluencies resulting from thought disorder and from language deprivation.

Within the results of this review, language ability was also found to be impaired outside of the context of thought disorder. Chatzidamianos et al.³⁴ identified that the production of classifiers was impaired in deaf participants with non-thought disorder SSD in comparison to healthy controls. They suggest that the reason for this is not clear but may be related to unclear reference or the fact that entity/semantic classifiers fuse meaning and gesture. Whatever the nature of this, there are likely linguistic deficits of language in deaf people with SSD that are not present in hearing populations. Linguistic communication ability was found to predict functional outcome above cognition and social cognition in prelingually deaf populations. Whereas, it is noted within hearing populations that adaptive outcomes are predicted by baseline neurocognition and clinical symptoms, but not by communication difficulties.⁸⁵ The deaf SSD patient's linguistic ability may also be a useful to inform treatment plans with its relation to outcomes. It is, therefore, important to consider the possibility that linguistic deficits in deaf SSD populations might represent dysfluency due to deprivation of language, experiences relating to formal thought disorder, or be representative of other linguistic deficits related to SSD symptomology which are not yet fully described.

Some researchers have suggested that impairments in social cognition relate to disorganised symptoms in SSD, particularly thought disorder.^{86,87} In hearing populations, relationships between social cognitive factors and symptoms of disorganisation and thought disorder have been reported in meta-analyses.²² Theory of

mind showed moderate associations with symptoms whereas emotion recognition showed small associations. The results of the current review indicate that facial affect processing, a form of emotion recognition, was a better mediator of the cognition-outcome relationship, which was significantly different to hearing populations. Whilst it is not possible to make direct comparisons between these results, it does suggest that social cognitive factors present differently in deaf and hearing people with SSD. This might be particularly relevant for emotion recognition and theory of mind. It has been suggested that emotion recognition, in the form of facial affect processing, may be more related to SSD symptomology in the prelingually deaf due to the primary visual nature of communication and the use of facial expressions in sign languages.⁸⁸⁻⁹⁰ Frith⁸⁶ suggests that misrepresentations in one's own and others' intentions underly psychotic symptomology. Whereas Hardy-Baylé et al.⁸⁷ suggest that deficits in executive functioning in those with SSD prevent integration of contextual information about one's own and others mental states, resulting in theory of mind impairment. Most studies addressing theory of mind in SSD research assume that theory of mind deteriorates as a result of psychopathology.⁹¹ But it cannot be ruled out that social cognition, including theory of mind, may be impaired during childhood, representing a precursor to psychotic symptomology, although the evidence is mixed.⁹²⁻⁹⁴ This is an important consideration for prelingually deaf people, who show protracted social cognition development during childhood,⁹⁵ which is particularly evident with late exposure to sign languages.⁹⁶

Limitations in deaf SSD research

This review highlights some important limitations across the evidence base which should be addressed. Firstly, the number of qualitative case study designs

included is notable. Whilst case studies are a legitimate research methodology, they require methodological justification and should display rigour in reporting data and analysis methodology.⁷⁶ The QuADS criteria identified that only one included case study clearly justified the methodological approach.⁴⁷

Secondly, symptom presentation of SSD within prelingually deaf people shows much overlap with that of hearing populations, but the use of measures and tools using items based on symptom clusters found in hearing populations are likely to show reduced validity in prelingually deaf populations. Of all the studies, only two^{34,39} used a measure for data collection that was specifically designed for deaf populations. Recruitment and data collection in deaf SSD research is likely to be difficult given the relatively small prelingually deaf clinical population and the small number of research staff who are familiar with the deaf population, its culture, and language.

Finally, the QuADS assessment identified a lack of stakeholder engagement within the published literature. In line with national guidance of best practice from the Health Research Authority,⁹⁷ greater consideration should be given to the inclusion of the Deaf community and stakeholders in the design, execution, and dissemination of research regarding deafness and SSD.

Strengths and limitations of the review

This review synthesised the literature around the expression of SSD symptoms within the prelingually deaf. It adopted a mixed methods approach to the inclusion of published papers which is a strength of the review as it allowed an inclusive synthesis of the relatively small, but dedicated, evidence base. Particularly, because the evidence base often uses case study designs, or mixed methods approaches to address research questions for an underrepresented population group. Another strength is that the current

review made use of a comprehensive search strategy across several databases and included citation searches forwards and backwards. This allowed the review to address all available research pertinent to the review question, some of which was only identified through meticulous citation searching. Nonetheless, it is likely that the current review suffers from some methodological limitations which should be considered.

Papers were only included if they were written or translated into English, this could introduce publication bias. Furthermore, one identified paper was inaccessible to the authors as the team did not have a membership to the platform the paper was stored on, although efforts were made to contact the authors.

The review adopted a narrative synthesis to analyse and discuss the literature. Whilst the guidance of Popay et al.³³ was used to inform the analysis, it is recognised that this guidance is designed for reviews of effectiveness and/or implementation studies, and therefore not every aspect of this guidance was relevant or possible within the current review. This means that the methodological rigour of the current review is likely to have been influenced by the author's application of this guidance and may subsequently be impacted by implicit bias.

Conclusion

The current systematic review identified that there are a range of differences in the conceptualisation and presentation of SSD symptoms in the prelingually deaf population. Although similarities in the rank order of hallucinations seems to be like hearing populations, the identification and conceptualisation of auditory and visual hallucinations and delusions relating to special abilities are likely to be different and influenced by the unique hearing and communication experiences of prelingually deaf people with SSD. Language abnormalities may present in sign languages in some ways

which are not analogous to hearing SSD populations. Language abnormalities may occur outside of FTD in prelingually deaf SSD populations which differs from the conceptualisation of language difficulties in hearing SSD research. The research in this area is limited and it is likely difficult to recruit to studies given the complexities of research with d/Deaf clinical populations. There are also a small number of researchers with relevant knowledge of Deaf cultural issues and awareness of the impact of language dysfluency in deaf populations. The literature in this area consists of several case study designs and studies which use small sample sizes which makes it difficult to draw firm, generalisable conclusions, particularly within the context of SSD. What is clear from the current review is that the area of prelingually deaf SSD research requires substantial attention in the future, with a particular focus on increasing the methodological rigour and reporting across research of all methodologies.

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Table 1.

Systematic Search Strategy Search Terms Used for Each Database Included in The Review.

Database	Boolean search string
APA Psychinfo	(TI (deaf or "hard of hearing" or "hearing impair*" or d/hh or
CINHAL	"hearing loss" or deafness) OR AB (deaf or "hard of hearing" or
MEDLINE	"hearing impair*" or d/hh or "hearing loss" or deafness) OR SU (
Complete	deaf or "hard of hearing" or "hearing impair*" or d/hh or "hearing loss" or deafness)) AND (TI (schizophren* or psychosis or psychotic or psychoses or paranoi*) OR AB (schizophren* or psychosis or psychotic or psychoses or paranoi*) OR SU (
Web of Science	schizophren* or psychosis or psychotic or psychoses or paranoi*)) (deaf or "hard of hearing" or "hearing impair*" or d/hh or "hearing loss" or deafness (Title) or deaf or "hard of hearing" or "hearing impair*" or d/hh or "hearing loss" or deafness (Abstract) or deaf or "hard of hearing" or "hearing impair*" or d/hh or "hearing loss" or deafness (Topic)) AND (schizophren* or psychosis or psychotic or psychoses or paranoi* (Title) or schizophren* or psychosis or psychotic or psychoses or paranoi* (Abstract) or schizophren* or psychosis or psychotic or psychoses or paranoi* (Topic))
EMBASE	('deaf' or 'hard of hearing' or 'hearing impair' or 'hearing loss' or deafness).ab,sh,ti. AND (schizophren* or psychosis or psychotic or psychoses or paranoi*).ab,sh,ti.

Table 2.*PIO Eligibility Criteria for Inclusion and Exclusion of Papers Identified by Sensitive Search Results*

	Inclusion	Exclusion
Population	<p>Adults, (aged eighteen and over) with no upper age limit who are profoundly deaf since an early age (pre-lingual).</p> <p>Have a diagnosis, or experience of psychosis/schizophrenia spectrum disorder, or formal thought disorder.</p> <p>People In inpatient or community settings.</p>	<p>Deaf or hard of hearing populations who become deaf later in life.</p> <p>People whose deafness is in relation to specific syndromic conditions (e.g. Ushers syndrome) as these may be considered a separate group with experiences unique to that population.</p>
Intervention	<p>Any study of quantitative or qualitative design (including single or multiple case studies) which considers symptoms or experiences relating to symptoms of schizophrenia.</p>	<p>Studies solely examining the audiological outcomes of cochlear implantation, which may be associated with auditory hallucinations.</p> <p>Studies solely examining musical audiological hallucinations in older adults. Or hallucinations related to other diagnoses, such as neurological disorders or dementias.</p>
Outcome	<p>Any outcome measuring, describing, or considering symptoms schizophrenia, psychosis, or related symptomology.</p> <p>Any objective mental health or functional outcome. Any subjective outcome identified through data collection methods.</p>	<p>Studies focussing only on the prevalence of schizophrenia diagnosis.</p>

Fig 1.

PRSIMA flowchart for screening of included studies.

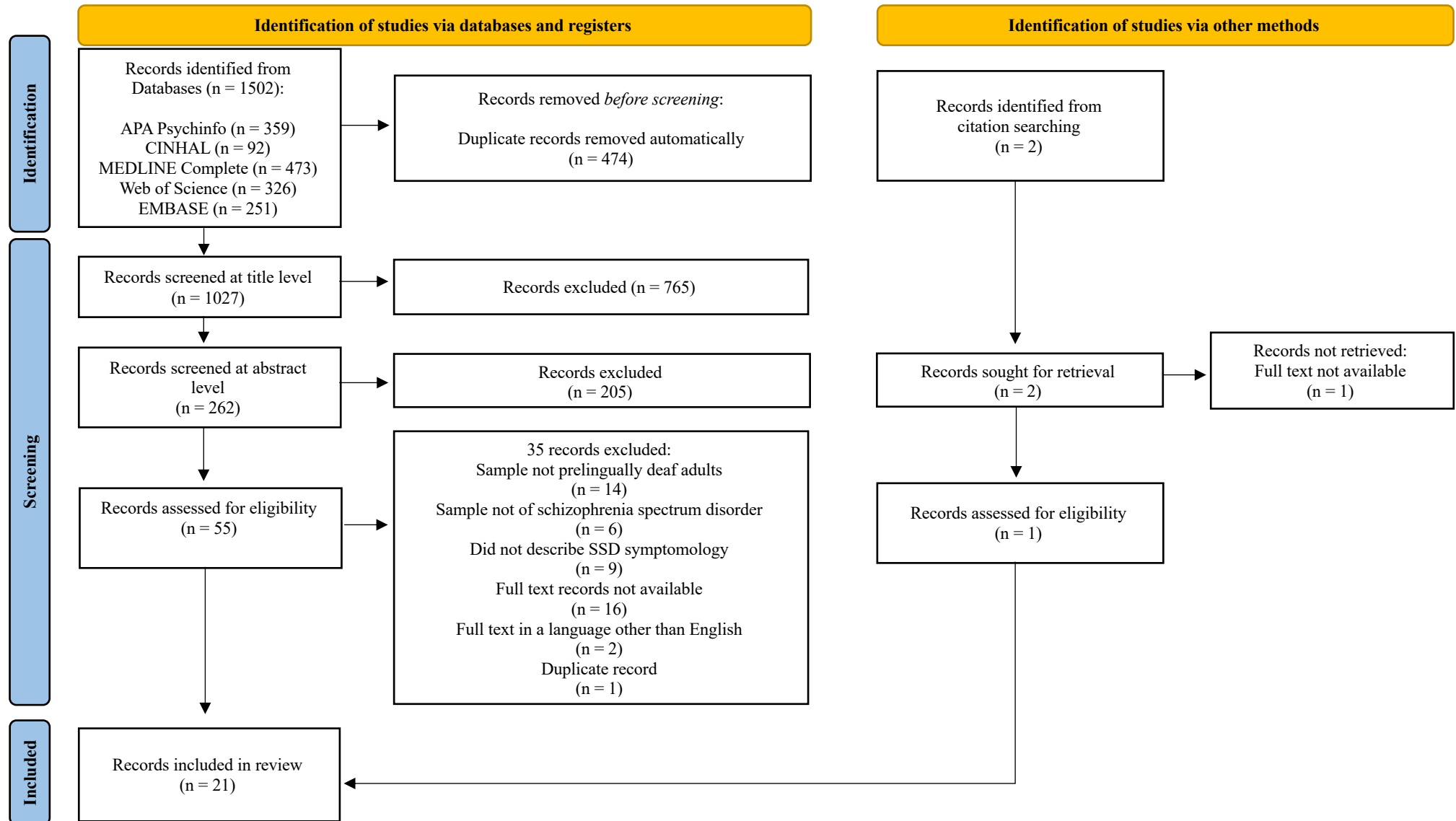


Table 3.

Study Characteristics Showing Methodology, Setting, Number of Participants, Participant Details, and Symptoms.

Study	Methodology	Setting/population	Prelingually deaf participants with SSD (n)	Control groups or other participants	Symptom(s) addressed
Morris et al. ⁴⁷	Qualitative (Systematic case study and thematic analysis)	Secure (forensic) specialist Deaf service	3	N/A	Hallucinations, Delusions
Thylur et al. ⁵¹	Qualitative (Case presentation)	Psychiatric in-patient	1	N/A	Delusions, Hallucinations, and Thought disorder
Chatzidamianos et al. ³⁴	Quantitative	In-patient and out-patient services.	14 9 male 5 female	35 deaf healthy volunteers similarly matched for age and IQ.	Language
Saha et al. ⁴⁹	Qualitative (Case study)	Outpatients	1	N/A	Negative, Catatonic
du Feu and McKenna ⁵³	Qualitative (Phenomenological analysis)	In-patient and out-patient services.	17	N/A	Hallucinations
Horton and Silverstein ³⁵	Quantitative	Psychiatric rehabilitation agency.	32	31 hearing participants similar gender, race, diagnosis, housing status, employment status, and psychiatric history variables.	Cognition

Study	Methodology	Setting/population	Prelingually deaf participants with SSD (n)	Control groups or other participants	Symptom(s) addressed
Horton ³⁶	Quantitative	Psychiatric rehabilitation agency.	34	N/A	Language, Cognition, Social Cognition,
Horton and Silverstein ³⁷	Quantitative	Psychiatric rehabilitation agency.	32	31 hearing participants similar gender, race, diagnosis, housing status, employment status, and psychiatric history variables.	Cognition Disorganisation
Schonauer et al. ⁴¹	Quantitative	Discharged psychiatric in-patients.	25	25 hearing SSD patients 25 prelingually non-psychotic patients 25 hearing non-psychotic patients	Language
Horton and Silverstein ⁴²	Quantitative	Psychiatric rehabilitation agency.	34	31 Hearing	Cognition, Social Cognition, Language
Horton and Silverstein ³⁸	Quantitative	Psychiatric rehabilitation agency.	34	31 Hearing	Cognition, Social Cognition, and Symptom Structure
Kubota et a. ⁴⁰	Quantitative	Out-patient clinic for deaf individuals with	11	14 Hearing subjects with schizophrenia	Social Cognition

Study	Methodology	Setting/population	Prelingually deaf participants with SSD (n)	Control groups or other participants	Symptom(s) addressed
		psychiatric disorders.		10 Healthy hearing controls (healthcare staff)	
Thacker ⁵⁴	Qualitative ('preliminary analysis')	'Psychiatric services for the deaf.'	30	7 prelingually deaf participants diagnosed with mania.	Communication/Thought Disorder
Critchley et al. ⁴⁵	Qualitative (Case study design)	Not clear	12	N/A	Hallucinations, Delusions
Weiler et al. ⁵²	Qualitative (case study)	In-patient.	1	N/A	Delusion, Disorganisation
Matsumoto et al. ⁴⁶	Qualitative (case study design)	In-patient	1	N/A	Hallucinations
Schonauer et al. ⁵⁰	Mixed methods (Descriptive statistics and case descriptions)	'Psychiatric institutions'	67	N/A	Hallucinations
Anglemyer and Crespi ⁴³	Qualitative (case study)	Inpatient	1	1 prelingually deaf participant with a diagnosis of affective disorder (not included in review)	Delusions, Disorganisation
Pedersen and Ernst Nielsen ⁴⁸	Qualitative (Case study)	Inpatient	1	N/A	Hallucinations
Briffa ⁴⁴	Qualitative (Case descriptions)	Not clear.	8	N/A	Disorganisation, Hallucination

Study	Methodology	Setting/population	Prelingually deaf participants with SSD (n)	Control groups or other participants	Symptom(s) addressed
Atkinson e al. ³⁹	Quantitative	Specialist mental health services for deaf people in the UK.	24	3 post lingual deaf (3 female, 1 male)	Hallucinations

Table 4.

Cross Tabulation of Quads Item Scores for Each Study Included in the Synthesis.

Study	Theoretical or conceptual underpinning to the research	Statement of research aim/s	Clear description of research setting and target population	The study design is appropriate to address the stated research aims	Appropriate sampling to address the research aims	Rationale for the choice of data collection tool/s	The format and content of data collection tool is appropriate to address the stated research aim/s	Description of the data collection procedure	Recruitment data provided	Justification for analytic method selected	The method of analysis was appropriate to answer the research aim/s	Evidence that the research stakeholders have been considered in research design or conduct	Strengths and limitations critically discussed	Total
Morris et al. ⁴⁷	3	3	2	3	2	3	3	2	1	3	3	0	1	29
Thylur et al. ⁵¹	1	1	0	0	0	0	0	2	0	0	1	0	0	5
Chatzidamianos et al. ³⁴	3	3	3	3	2	3	3	2	2	0	3	1	1	29
Saha et al. ⁴⁹	2	3	2	2	1	1	2	2	2	1	2	0	0	6
du Feu and McKenna ⁵³	3	3	2	3	3	3	3	3	3	2	3	1	0	20

Study	Theoretical or conceptual underpinning to the research	Statement of research aim/s	Clear description of research setting and target population	The study design is appropriate to address the stated research aims	Appropriate sampling to address the research aims	Rationale for the choice of data collection tool/s	The format and content of data collection tool is appropriate to address the stated research aim/s	Description of the data collection procedure	Recruitment data provided	Justification for analytic method selected	The method of analysis was appropriate to answer the research aim/s	Evidence that the research stakeholders have been considered in research design or conduct	Strengths and limitations critically discussed	Total
Horton and Silverstein ³⁵	3	3	3	3	2	3	2	2	3	3	3	1	3	32
Horton ³⁶	3	3	3	3	2	3	3	3	2	0	3	1	1	34
Horton and Silverstein ³⁷	1	2	3	2	2	0	1	2	2	0	2	0	0	30
Schonauer et al. ⁴¹	3	3	3	3	2	3	3	2	2	3	3	1	1	17
Horton and Silverstein ⁴²	3	3	3	3	3	3	3	2	2	3	2	0	2	32
Horton and Silverstein ³⁸	2	3	3	3	2	2	3	3	2	0	3	0	1	32
Kubota et al. ⁴⁰	3	2	1	1	0	0	1	0	0	0	1	0	0	27

Study	Theoretical or conceptual underpinning to the research	Statement of research aim/s	Clear description of research setting and target population	The study design is appropriate to address the stated research aims	Appropriate sampling to address the research aims	Rationale for the choice of data collection tool/s	The format and content of data collection tool is appropriate to address the stated research aim/s	Description of the data collection procedure	Recruitment data provided	Justification for analytic method selected	The method of analysis was appropriate to answer the research aim/s	Evidence that the research stakeholders have been considered in research design or conduct	Strengths and limitations critically discussed	Total
Thacker ⁵⁴	1	0	0	0	0	0	0	0	0	0	0	0	0	9
Critchley et al. ⁴⁵	2	1	1	1	0	0	0	0	1	0	2	1	0	1
Weiler et al. ⁵²	3	2	1	1	1	0	0	0	0	0	1	0	0	9
Matsumoto et al. ⁴⁶	3	3	3	2	3	2	1	2	3	1	2	0	0	9
Schonauer et al. ⁵⁰	1	1	2	1	0	1	2	2	0	0	1	0	0	25
Anglemyer and Crespi ⁴³	1	0	1	0	0	0	0	0	1	0	0	0	0	2
Pedersen and Ernst Nielsen ⁴⁸	1	3	2	3	2	3	3	3	2	2	3	1	1	11

Study	Theoretical or conceptual underpinning to the research	Statement of research aim/s	Clear description of research setting and target population	The study design is appropriate to address the stated research aims	Appropriate sampling to address the research aims	Rationale for the choice of data collection tool/s	The format and content of data collection tool is appropriate to address the stated research aim/s	Description of the data collection procedure	Recruitment data provided	Justification for analytic method selected	The method of analysis was appropriate to answer the research aim/s	Evidence that the research stakeholders have been considered in research design or conduct	Strengths and limitations critically discussed	Total
Briffa ⁴⁴	1	0	1	0	0	0	0	0	0	0	0	0	0	3
Atkinson e al. ³⁹	1	1	2	1	0	0	0	0	1	0	0	0	0	29

Notes: QuADS total possible score: 39.

Table 5.*Frequency and Modality of Hallucinations.*

Study	Total number of prelingually deaf participants (n)	Hallucinations experienced by modality
Critchley et al. ⁴⁵	12	10 Auditory hallucinations 10 visual hallucinations
Pedersen and Ernst Nielsen ⁴⁸	1	1 auditory hallucination 1 visual hallucination
Pedersen and Ernst Nielsen ⁴⁸	24	24 auditory verbal hallucinations
Morris et al. ⁴⁷	3	2 visual hallucinations 1 auditory hallucination 1 tactile
Du Feu and McKenna ⁵³	17	15 auditory hallucinations 8 visual 8 somatic 3 olfactory
Matsumoto et al. ⁴⁶	1	1 auditory verbal
Schonauer et al. ⁵⁰	67	35 auditory 34 visual 13 somatic 10 tactile 3 olfactory 1 gustatory
Thylur et al. ⁵¹	1	1 visual 1 tactile
Briffa ⁴⁴	8	2 auditory verbal 1 tactile

Table 6.*Summary of Hallucinatory Content.*

Study	Modality	Content of hallucinations
Critchley et al. ⁴⁵	Auditory Visual	<ul style="list-style-type: none"> • Experiences considered to be heard or described as voices were set in a background of haptic hallucinations, passivity phenomena and delusions often of paranoid type. • Auditory content included verbal hallucinations from known and unknown people. Some participants had positive relationships with the voices, but most were perceived negatively, in a persecutory or fearful manner. Some auditory hallucinations were not experienced as voices, but as sounds such as hearing god like ‘a bell’. • Themes of sexual and religious nature were described in both auditory and visual hallucinations. • Visual hallucinations included seeing lips move or seeing people sign to them. Participants also described seeing faces in walls of people laughing at them. • Tactile hallucinations were described in the • Visual and auditory hallucinations of a religious nature. Seeing God and seeing his lips move, hearing god like ‘a bell’.
Pedersen and Ernst Nielsen ⁴⁸	Auditory Visual	<ul style="list-style-type: none"> • Auditory verbal hallucinations of a commanding nature encouraging self-harm acts. • The participants parents voices were heard which were praising and supportive. • Visual hallucination of a recently deceased family member with associated auditory hallucination.

Study	Modality	Content of hallucinations
Atkinson et al. ³⁹	Auditory	<ul style="list-style-type: none"> • Prelingually deaf participants experienced nonauditory voices with subvisual images of voices. • Participants knew the identity and gender of the voice but did not deduce this information from the way it sounds. They reported seeing an image of the voice communicating with them in their mind's eye when voice hallucinations were present. • All participants had experienced seeing an image of the voice signing or lips moving in their mind. Imagery of fingerspelling was also seen but was less common. • Content included persecutory and religious themes.
Morris et al. ⁴⁷	Auditory Visual Tactile	<ul style="list-style-type: none"> • Visual hallucinations of people mouthing and signing rude things. • Tactile sensations of being struck or pushed. Participant believed that people were persecuting him because of his religious beliefs and his status as a Deaf person. • Religious themes such as God's light shining upon animals and causing them to freeze.
Du Feu and McKenna ⁵³	Auditory Visual Olfactory	<ul style="list-style-type: none"> • The voices were experienced in the second and/or third person. • Non-verbal auditory hallucinations, which were either elementary, (e.g. drumming, birdsong, rumbling) or speech sounds (laughing and talking in which the words could not be deciphered). • Visual hallucinations ranged from flashing lights to faces on walls, to more-or-less formless 'ghosts', to fully formed figures of the Devil, people, a dragon, etc. • Olfactory hallucinations took the form of both unidentifiable smells and identifiable ones such as smoke, mint, or rotten eggs. • Somatic hallucinations included vibrations, people touching them, abdominal twisting and bursting sensations, heartbeats other than their own, and people inside their bodies. • Themes were religious, sexual, or voices of TV characters or family members (including non-existent family members. Often of a persecutory nature.

Study	Modality	Content of hallucinations
Matsumoto et al. ⁴⁶	Auditory verbal	<ul style="list-style-type: none"> • Auditory verbal hallucinations with manifestations, such as someone saying, “mommy, mommy”, a TV announcer, or members of the mafia. The voices were experienced as a sound felt inside the head.
Schonauer et al. ⁵⁰	Auditory	<ul style="list-style-type: none"> • Persecutory themes from known or unknown individuals. 11/23 could identify verbal hallucinations, others described other auditory phenomena or could not articulate the hallucinatory sound. • Volume of voices or sounds described. • Nonverbal auditory hallucinations in the form of electromagnetic waves. • Acoasms, i.e. having heard ‘noises’ or ‘sounds’ in the context of hallucinatory experience. • God who had been talking in sign language, and another patient retrospectively identified her mother. • In quantitative terms it seems noteworthy that ‘visual communication’ did not occur frequently enough to explain the increased prevalence of visual hallucinations in our sample. • Only one patient in our sample reported a particular type of hallucinatory visual communication which conveyed at least some aspect of lipreading.
Thylur et al. ⁵¹	Auditory Visual	<ul style="list-style-type: none"> • People mouthing and signing and sensations of being struck or pushed. • Religious content in visual and auditory hallucinations.

Study	Modality	Content of hallucinations
Briffa ⁴⁴	Auditory Visual	<ul style="list-style-type: none"><li data-bbox="741 347 1977 416">• Auditory and visual hallucinations relating to communication between participants and religious figures in sign language and through the TV.<li data-bbox="741 424 1977 493">• Tactile hallucinations related to sexual themes and communication from religious figures such as god.<li data-bbox="741 501 1977 533">• Auditory hallucinations of a persecutory and religious nature.

Table 7.*Thematic Content of Delusions Noted Within Studies.*

Study	Type of study	Total participants (n)	Participants experiencing delusions (n)	Types of delusions
Anglemyer and Crespi ⁴³	Case study	1	1	Persecutory
Thylur et al. ⁵¹	Case study	1	1	Ideas of reference – persecutory
Morris et al. ⁴⁷	Systematic case study	3	2	Delusions of grandeur
Critchley et al. ⁴⁵	Case study	12	3	2 persecutory 1 grandiose
Weiler et al. ⁵²	Case study	1	1	Persecutory
du Feu and McKenna ⁵³	Phenomenological analysis	17	2	Possible grandiose (hearing)
Saha et al. ⁴⁹	Case study	1	1	Persecutory

Table 8.

Summary of Differences and Similarities of SSD Symptom Presentation between Prelingually Deaf and Hearing Populations.

Symptom	Prelingually deaf SSD symptom presentation	Hearing SSD symptom presentation
Hallucinations	<p>Modality</p> <p>Auditory hallucinations are reported most frequently followed by visual, tactile, olfactory, and then gustatory.</p> <p>Visual hallucinations are reported nearly as often as auditory hallucinations. Somatic and/or tractile hallucinations are also reported more frequently in prelingually deaf studies.^{39,45,50,53}</p> <p>Content</p> <p>Auditory hallucinations are often reported to be religious and or persecutory in nature. However, studies also identify that the quality and characteristics may</p>	<p>Modality</p> <p>Auditory hallucinations are reported most frequently followed by visual, tactile, and olfactory.</p> <p>Auditory hallucinations are experienced much more frequently and the lifetime prevalence of auditory hallucinations above any other modality is much higher.⁹⁸</p> <p>Content</p> <p>Derogatory, threatening, persecutory, critical, and abusive content is reported most frequently in general SSD auditory hallucinations, but hallucinations which</p>

Symptom	Prelingually deaf SSD symptom presentation	Hearing SSD symptom presentation
Delusions	<p>map onto the unique hearing experiences of the individual.³⁹ Congenitally prelingually deaf people may be more likely to report ‘non auditory’ voices, whereas those who have had different experiences of sound before the onset of deafness may describe auditory voices or mixed perception. Prelingually deaf people with SSD may also describe these experiences in relation to their volume, which is a characteristic which can also be perceived through tactile means.</p> <p>Visual hallucinations can take the form of visual communication.^{44,45,47,50} Some studies noted that visual hallucinations may be representative of a subvisual precept of voice, rather than true visual hallucinations.⁴⁵</p>	<p>are experienced as guiding, helpful, and inspiring are also noted.⁹⁹</p> <p>Auditory hallucinations in general SSD populations may be more likely to include hallucinations which can be described as ‘literally auditory’ or a mixture of distinct auditory and ‘thought like’ voices.¹⁰⁰</p> <p>Visual hallucinations are often experienced with auditory hallucinations, but the two are discernible, with different cognitive process being associated with visual and auditory processes.^{98,101}</p>
	Content	Content

Symptom	Prelingually deaf SSD symptom presentation	Hearing SSD symptom presentation
	<p>Common themes identified are religious persecution and ideas of reference, persecution, grandiose delusions and having special abilities.</p>	<p>The most prevalent delusional themes in general SSD populations are persecutory, ideas of reference, grandiosity, control, and religious.¹⁰²</p>
	<p>Prelingually deaf people with SSD may report having special abilities to hear or experience of hearing which is not congruent with their medical history.⁵³ Themes of powerlessness, isolation as a d/Deaf person and barriers in communication may be reflected in their identity as a d/Deaf person.⁴⁷</p>	<p>The area of grandiose delusions in general SSD populations has received little attention in the literature. Factor analysis of psychometric measures identifies factors relating to inflated self, religiosity, fame, and attraction.¹⁰³ Items relating to special abilities in the context of perceptive abilities are not identified within the factor loadings.</p>
	<p>It may be difficult to distinguish between hallucinations and delusions in the assessment of prelingually deaf people with SSD in the context of hearing status and auditory experiences.⁵³</p>	

Symptom	Prelingually deaf SSD symptom presentation	Hearing SSD symptom presentation
Thought disorder	<p data-bbox="528 395 1223 539">Prelingually deaf people with SSD may show signs of thought disorder uniquely in their communication, particularly those who use sign languages.⁵⁴</p> <p data-bbox="528 673 1223 976">Some studies have evidenced spatial anomalies within sign language. Paraphasia may be present with examples of reverse finger spelling and errors in the spatial location of signs. Neologisms may also be present, as well as perseveration of signs and themes within conversation.^{51,54}</p> <p data-bbox="528 1059 1223 1315">Prelingually deaf people are also more likely to experience language dysfluency and there is a high possibility that language dysfluency can be misinterpreted as thought disorder. Researchers have suggested that one key difference is assessing whether</p>	<p data-bbox="1272 395 1989 593">There is no consensus of factor structure of thought disorder, but it is likely to comprise of abnormalities related to the organisation, rate, impoverishment, and idiosyncrasy of speech.¹⁰⁴</p> <p data-bbox="1272 673 1989 871">Thought disorder is an objective sign observed by clinicians with a focus on different abnormalities in the rate and organisation of speech described in FTD rating scales.¹⁰⁵</p> <p data-bbox="1272 1059 1989 1203">The relative severity of disorganised, idiosyncratic, pressured, and impoverished speech is likely to indicate a difference between SSD and mood disorders.¹⁰⁴</p>

Symptom	Prelingually deaf SSD symptom presentation	Hearing SSD symptom presentation
Cognition and language	<p>emotional state is congruent with the theme of conversation.⁵² However, the evidence base lacks a lot of studies with methodological rigour in this respect.</p> <p>Some research has indicated that visual integration in prelingually deaf people with SSD may be less affected than in hearing populations.³⁷ Although visual integration in prelingually deaf people with SSD are likely impaired by disorganised symptoms of SSD.</p> <p>Deficits in language may be evident in linguistic concepts which are evident in sign language, but not spoken language.^{34,54} Deficits in sign language handshape production and the use of classifiers have been noted in the research. This has been evidenced in studies which excluded prelingually deaf people with SSD who were diagnosed with formal thought disorder.</p>	<p>Factor analyses have identified that thought disorder generally loads onto a factor of disorganisation, together with bizarre behaviour and inappropriate affect.¹⁰⁴</p> <p>Consistent deficits are seen in perception, particularly gain control and visual integration.¹⁰⁶ Perceptual organisation was also associated with the presence of disorganised symptoms, as it was in the prelingually deaf SSD literature.¹⁰⁷</p> <p>Expressive language abnormalities in hearing SSD research focus on the context of thought disorder and are widely considered to contribute to the symptoms of this disorder¹⁰⁸. The abnormalities in thought disorder include paraphasia's in spoken language and the use of language which is otherwise semantically anomalous.^{109,110}</p>

Symptom	Prelingually deaf SSD symptom presentation	Hearing SSD symptom presentation
Social cognition (recognising emotions in others)	<p>Linguistic ability has been found to be associated with functional outcome in prelingually deaf people with SSD more than certain aspects of cognition and social cognition (such as word memory, visuospatial memory, early visual processing, and vigilance).³⁶</p> <p>Prelingually deaf people with SSD may be less able to infer affect from facial expressions.⁴⁰</p> <p>Facial affect labelling may be related to specific symptoms in prelingually deaf people with SSD.³⁷</p> <p>Heightened ability in facial affect processing was noted in participants with higher levels of mood disturbance (anxiety, suicidality, depression, and guilt).³⁷</p>	<p>Neurocognition was found to better predict adaptive outcomes in hearing people with SSD than disconnected or underproductivity of speech. Whereas outcomes related to social engagement and friendships were better predicted by verbal underproductivity.⁸⁵ However, language abnormalities are understood in hearing SSD are understood in the context of thought disorder.</p> <p>Hearing people with SSD may have a moderately to severely impaired perception of facial emotion.¹¹¹</p> <p>In hearing SSD research, the severity of negative SSD symptoms has been found to correspond with worse facial affect processing.^{112,113} The correlation with specific mood disturbance on facial affect processing has not been a focus in hearing SSD research.</p>

Symptom	Prelingually deaf SSD symptom presentation	Hearing SSD symptom presentation
	In prelingually deaf SSD populations, facial affect processing has been found to be a stronger and more consistent mediator of the cognition – outcome relationship than theory of mind. ⁴²	In hearing SSD populations both facial affect processing and theory of mind are equally effective in mediating the cognition – outcome relationship when cognitive tasks are linguistically based. ⁴²

Table 9.

Key Considerations for Clinicians Assessing SSD in Prelingually Deaf People.

Area of Assessment	Key Considerations
Hallucinations	<p>Clinicians should consider the hearing experiences of the prelingually deaf when assessing hallucinations.</p> <p>Congenitally deaf people may report ‘non-auditory’ voices or be more likely to report sound sensations that can be perceived through tactile senses (such as volume). People who have had some experience of sound may describe auditory voices or mixed perception.</p> <p>Clinicians should carefully consider the modality of hallucinations and not rely on descriptions from assessment tools developed with hearing samples to make sense of hallucinations in the prelingually deaf. Experiences that might be labelled as visual hallucinations may in fact be subvisual precepts of voice or reflect the person’s use of sign language in their receptive and expressive communication.</p>

Area of Assessment	Key Considerations
Delusions	<p>Clinicians should be cautious in interpreting delusions within the prelingually deaf population. A key consideration is that it may be difficult to differentiate between delusionary experiences and hallucinations, particularly when this content relates to special perceptual abilities of sound.</p> <p>Clinicians should take time to understand the cultural identity of the prelingually deaf person they are assessing. Some evidence shows that delusional themes may map onto their identity as a deaf person and that barriers they experience in a hearing-normative world may be reflected in themes of powerlessness and isolation.</p>
Thought disorder	<p>Clinicians must consider that the organisation and expression of thought can be influenced by factors other than formal thought disorder in the prelingually deaf. Language dysfluency can stem from language deprivation in early life, and this may be easily mistaken for evidence of thought disorder, particularly if the clinician is unaware of the person’s early language experiences. Language dysfluency may be mistaken for derailment, poverty of speech content, or incoherence. Idiosyncratic home signs² may also be mistaken for neologisms.</p>

² Signed gestures that were developed inside of a caregivers home, but not attributable to a national sign language.

Area of Assessment	Key Considerations
Language and social cognition	<p data-bbox="504 355 1995 683">Clinicians should be sure to assess thought disorder in the persons first or preferred language. Assessing thought disorder through written or spoken communication in someone whose first language is sign language is likely to cause problems in interpreting their symptoms. The use of a sign language interpreter who is sensitive to Deaf culture may help to identify anomalous use of signs (e.g., errors in spatial location of signs, reverse finger spelling, perseveration of signs and themes, and evidence of clanging) which might indicate the presence of thought disorder.</p> <p data-bbox="504 756 1995 938">Clinicians should be aware that linguistic deficits in prelingually deaf SSD may exist with or without the presence of formal thought disorder. This may be harder to identify in linguistic concepts which are found in sign languages but not spoken languages (e.g. classifiers and handshape production).</p> <p data-bbox="504 1050 1995 1227">Facial expressions within sign languages are used to express linguistic information and emotions. Clinicians should be aware that prelingually deaf people with SSD may show more difficulty inferring affect from facial expressions than those without SSD.</p>

Area of Assessment	Key Considerations
Practical considerations	<p>When assessing SSD in this population, it may be necessary to consider these aspects as part of the assessment, but also consider how they might impact the person’s ability to engage with the assessment process and communicate their experiences within the context of a clinical assessment.</p> <p>Hearing clinicians should consider if they have the relevant level of sign language and Deaf cultural knowledge to comprehensively assess SSD in the prelingually deaf population. Where needed, clinicians should ensure that they make use of a suitable sign language interpreter and work in partnership with the deaf person and the interpreter to best understand how their symptoms present.</p> <p>Clinicians should consider the practical needs of assessing SSD with sign languages. Suitable spaces which offer confidentiality for the visual medium of sign language should be used and adequate time should be allowed for extended assessment, which may be required to explore the persons symptoms comprehensively. Clinicians should make use of an extended history taking which includes details of the persons early language and hearing experiences, such as their exposure to sign language and any idiosyncratic or home signs.</p>

Area of Assessment	Key Considerations
	<p>Clinicians should be particularly aware that the use of assessment tools and psychometrics which are normed on hearing samples are likely to be of limited utility. They may not adequately identify the modality of symptoms and they may miss aspects of SSD symptomology which are seen uniquely in prelingually deaf SSD. The results of these should be interpreted with caution.</p>

Appendix A – Quality Assessment with Diverse Studies (QuADS) Criteria

QuADS Criteria	0	1	2	3
1. Theoretical or conceptual underpinning to the research	No mention at all.	General reference to broad theories or concepts that frame the study. e.g. key concepts were identified in the introduction section.	Identification of specific theories or concepts that frame the study and how these informed the work undertaken. e.g. key concepts were identified in the introduction section and applied to the study.	Explicit discussion of the theories or concepts that inform the study, with application of the theory or concept evident through the design, materials and outcomes explored. e.g. key concepts were identified in the introduction section and the application apparent in each element of the study design.
2. Statement of research aim/s	No mention at all.	Reference to what the sought to achieve embedded within the report but no explicit aims statement.	Aims statement made but may only appear in the abstract or be lacking detail.	Explicit and detailed statement of aim/s in the main body of report.
3. Clear description of research setting and target population	No mention at all.	General description of research area but not of the specific research environment e.g. 'in primary care.'	Description of research setting is made but is lacking detail e.g. 'in primary care practices in region [x]'.	Specific description of the research setting and target population of study e.g. 'nurses and doctors from GP practices in [x] part of [x] city in [x] country.'
4. The study design is appropriate to address the stated research aim/s	No research aim/s stated or the design is entirely unsuitable e.g. a Y/N item survey for a study seeking to undertake exploratory work of lived experiences. .	The study design can only address some aspects of the stated research aim/s e.g. use of focus groups to capture data regarding the frequency and experience of a disease.	The study design can address the stated research aim/s but there is a more suitable alternative that could have been used or used in addition e.g. addition of a qualitative or	The study design selected appears to be the most suitable approach to attempt to answer the stated research aim/s.

			quantitative component could strengthen the design.	
5. Appropriate sampling to address the research aim/s	No mention of the sampling approach.	Evidence of consideration of the sample required e.g. the sample characteristics are described and appear appropriate to address the research aim/s.	Evidence of consideration of sample required to address the aim. e.g. the sample characteristics are described with reference to the aim/s.	Detailed evidence of consideration of the sample required to address the research aim/s. e.g. sample size calculation or discussion of an iterative sampling process with reference to the research aims or the case selected for study.
6. Rationale for choice of data collection tool/s	No mention of rationale for data collection tool used.	Very limited explanation for choice of data collection tool/s. e.g. based on availability of tool.	Basic explanation of rationale for choice of data collection tool/s. e.g. based on use in a prior similar study.	Detailed explanation of rationale for choice of data collection tool/s. e.g. relevance to the study aim/s, co-designed with the target population or assessments of tool quality.
7. The format and content of data collection tool is appropriate to address the stated research aim/s	No research aim/s stated and/or data collection tool not detailed.	Structure and/or content of tool/s suitable to address some aspects of the research aim/s or to address the aim/s superficially e.g. single item response that is very general or an open-response item to capture content which requires probing.	Structure and/or content of tool/s allow for data to be gathered broadly addressing the stated aim/s but could benefit from refinement. e.g. the framing of survey or interview questions are too broad or focused to one element of the research aim/s.	Structure and content of tool/s allow for detailed data to be gathered around all relevant issues required to address the stated research aim/s.
8. Description of data collection procedure	No mention of the data collection procedure.	Basic and brief outline of data collection procedure e.g. 'using a questionnaire distributed to staff'.	States each stage of data collection procedure but with limited detail or states some stages in detail but	Detailed description of each stage of the data collection procedure, including when, where and how

			omits others e.g. the recruitment process is mentioned but lacks important details.	data was gathered such that the procedure could be replicated.
9. Recruitment data provided	No mention of recruitment data.	Minimal and basic recruitment data e.g. number of people invited who agreed to take part.	Some recruitment data but not a complete account e.g. number of people who were invited and agreed.	Complete data allowing for full picture of recruitment outcomes e.g. number of people approached, recruited, and who completed with attrition data explained where relevant.
10. Justification for analytic method selected	No mention of the rationale for the analytic method chosen.	Very limited justification for choice of analytic method selected. e.g. previous use by the research team.	Basic justification for choice of analytic method selected e.g. method used in prior similar research.	Detailed justification for choice of analytic method selected e.g. relevance to the study aim/s or comment around of the strengths of the method selected.
11. The method of analysis was appropriate to answer the research aim/s	No mention at all.	Method of analysis can only address the research aim/s basically or broadly.	Method of analysis can address the research aim/s but there is a more suitable alternative that could have been used or used in addition to offer a stronger analysis.	Method of analysis selected is the most suitable approach to attempt answer the research aim/s in detail e.g. for qualitative interpretative phenomenological analysis might be considered preferable for experiences vs. content analysis to elicit frequency of occurrence of events.
12. Evidence that the research stakeholders have been considered in research design or conduct.	No mention at all.	Consideration of some the research stakeholders e.g. use of pilot study with target sample but no	Evidence of stakeholder input informing the research. e.g. use of pilot study with feedback influencing the study	Substantial consultation with stakeholders identifiable in planning of study design and in preliminary work e.g. consultation in the

		<p>stakeholder involvement in planning stages of study design.</p>	<p>design/conduct or reference to a project reference group established to guide the research.</p>	<p>conceptualisation of the research, a project advisory group or evidence of stakeholder input informing the work.</p>
<p>13. Strengths and limitations critically discussed</p>	<p>No mention at all.</p>	<p>Very limited mention of strengths and limitations with omissions of many key issues. e.g. one or two strengths/limitations mentioned with limited detail.</p>	<p>Discussion of some of the key strengths and weaknesses of the study but not complete. e.g. several strengths/limitations explored but with notable omissions or lack of depth of explanation.</p>	<p>Thorough discussion of strengths and limitations of all aspects of study including design, methods, data collection tools, sample & analytic approach.</p>

Appendix B - Author Guidelines for the International Journal on Mental Health and Deafness

Author Guidelines Preparation of Manuscript

Include:

- Forename(s) and surnames of authors (see Authorship section below) Author affiliations: department, institution, city, state, country Abstract 300 words
- 3–6 keywords
- Running header (shortened title)
- Corresponding author: name, physical address, phone, fax, email Double-spacing
- 3-cm margins Page numbers
- Clear concise language UK spelling
- Indicate placement of tables and figures
- The preferred electronic format for text is Microsoft Word
- Use International Systems of Units (SI) symbols and recognized abbreviations for units of measurement
- Do not punctuate abbreviations eg, et al, ie
- Spell out acronyms in the first instance in the abstract and paper
- Word counts are not specified. In general, shorter items range from 1000 to 3000 words and reviews from 3000 to 7,500
- Generic drug names are used in text, tables, and figures
- Suppliers of drugs, equipment, and other brand-name material are credited in parentheses (company, name, city, state, country)
- If molecular sequences are used, provide a statement that the data have been deposited in a publicly accessible database, eg, GenBank, and indicate the database accession number.

While the editors fully understand the extra challenges posed to authors whose native language is not English, we must ask that all manuscripts be reviewed and edited by a native speaker of English with expertise in that area prior to submission.

Authorship

Authorship credit should be based on: 1) Substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data; 2) Drafting the article or revising it critically for important intellectual content; and 3) Final approval of the version to be published. Authors should meet conditions 1, 2, and 3.

When a large, multicenter group has conducted the work, the group should identify the individuals who accept direct responsibility for the manuscript (3). These individuals should fully meet the criteria for authorship/contributorship defined above, and editors will ask these individuals to complete journal-specific author and conflict-of-interest disclosure forms. When submitting a manuscript authored by a group, the corresponding author should clearly indicate the preferred citation and identify all individual authors as well as the group name. Journals generally list other members of the group in the Acknowledgments. The NLM indexes the group name and the names of individuals the group has identified as being directly responsible for the manuscript; it also lists the names of collaborators if they are listed in Acknowledgments.

Acquisition of funding, collection of data, or general supervision of the research group alone does not constitute authorship.

All persons designated as authors should qualify for authorship, and all those who qualify should be listed.

Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content.

Increasingly, authorship of multicenter trials is attributed to a group. All members of the group who are named as authors should fully meet the above criteria for authorship/contributorship.

The group should jointly make decisions about contributors/authors before submitting the manuscript for publication. The corresponding author/guarantor should be prepared to explain the presence and order of

these individuals. It is not the role of editors to make authorship/contributorship decisions or to arbitrate conflicts related to authorship.

Contributors Listed in Acknowledgments All contributors who do not meet the criteria for authorship should be listed in an acknowledgments section. Examples of those who might be acknowledged include a person who provided purely technical help, writing assistance, or a department chairperson who provided only general support. Authors should declare whether they had assistance with study design, data collection, data analysis, or manuscript preparation. If such assistance was available, the authors should disclose the identity of the individuals who provided this assistance and the entity that supported it in the published article. Financial and material support should also be acknowledged.

Groups of persons who have contributed materially to the paper but whose contributions do not justify authorship may be listed under such headings as “clinical investigators” or “participating investigators,” and their function or contribution should be described—for example, “served as scientific advisors,” “critically reviewed the study proposal,” “collected data,” or “provided and cared for study patients.”

Because readers may infer their endorsement of the data and conclusions, these persons must give written permission to be acknowledged.

Related Authors

Where authors of a paper are related this should be disclosed at the time of submission. Please provide details of the family relationship between such authors.

Figures and Tables

- Submit as separate files
- Number consecutively

- Provide a descriptive heading/legend
- Place abbreviations and footnotes immediately below the table
- Use superscript a, b, c... as identifiers
- Submit figures as PDFs, TIFF files, or in their originating graphics application

- Supply TIFF files (Line Art 900 dpi, Combination (Line Art + Halftone) 900 dpi, Halftone 300 dpi)
- Graphics downloaded from Web pages are NOT acceptable
- Submit multi-panel figures, ie with parts labeled a,b,c,d, as one file

Supplementary Data

Any supplementary data should be kept to **6 typeset pages or 2,400 words**. If you have any more than this you should provide a link to the supplementary data on an external website, your institute's website for example. We welcome video files either as supplementary data or as part of the actual manuscript to show operations, procedures, etc.

Reference Style

IJMHD follow the style adopted by the American Medical Association (AMA),* (pp39–79. which, in turn, is based on the style developed by the International Committee of Medical Journal Editors in 1978 in Vancouver.

Please note that authors are responsible for the accuracy and completeness of their references.

Text citations: Cite references sequentially in text, tables, and legends by superscript Arabic numerals with no parentheses, eg, 1 or 3,4 or 10–15. Numbers should be placed **after** punctuation marks, eg, .3,4



Section Two: Empirical Paper

Investigating Intimate Partner Violence, Adult Attachment Style, and Early Language Experiences as Predictors of Psychological Well-Being in Deaf People

William de Gaunza

Doctorate in Clinical Psychology

Division of Health Research

Lancaster University

All correspondence should be sent to:

William de Gaunza

Doctorate in Clinical Psychology

Lancaster University

Health Innovation One

Sir John Fisher Drive

Lancaster University

LA1 4AT

Email: w.degaunza@lancaster.ac.uk

Prepared for the Journal of Interpersonal Violence. See Appendix E for author guidelines.

Abstract

Background: Deaf people may have unique language experiences and communication needs which can influence how they understand and seek help for traumatic abuse. Intimate Partner Violence (IPV) is one such form of abuse and the literature in hearing populations suggests that IPV has detrimental effects on psychological well-being. Insecure adult attachment style is associated with IPV victimisation and influences the relationship between IPV and mental health outcomes in hearing populations.

Study question: Does IPV victimisation, adult attachment style, and early language exposure statistically predict well-being in a deaf community sample?

Methods: 63 deaf participants were recruited via social media advertisements to complete an online questionnaire. Data were analysed through Spearman's Rho correlations and hierarchical regression analysis.

Results: High levels of IPV victimisation were reported. No statistically significant correlations were found between well-being and any other variables, although attachment avoidance was positively associated with all IPV victimisation variables. Hierarchical regression models did not significantly predict well-being.

Major implications: Deaf people may be more likely to experience a range of IPV victimisation, possibly with prevalence rates higher than hearing populations. The unique language experiences and communication needs of deaf people are likely to represent a range of factors that influence power imbalances within relationships which underpin IPV victimisation and perpetration. The study suffers from a range of methodological issues which mean that results must be interpreted with caution.

Key words: Deaf, intimate partner violence, domestic abuse, attachment, well-being

Approximately 12 million people are deaf or hard of hearing in the United Kingdom (Royal National Institute for Deaf People, 2020). Poor access to appropriate communication and a lack of deaf awareness in hearing communities can have a significant impact on the physical and psychological needs of deaf people (du Feu, 2017). Sign languages are syntactically and grammatically distinct from other languages. As a result, sign language users have challenges accessing health information and services. For example, they experience linguistic, procedural, and cultural challenges when accessing written psychological self-report measures (Chatzidamianos et al., 2021). Deaf people may decline access to GP services for fear about their communication needs (Action on Hearing Loss, 2013). In addition, there is an increased risk that deaf people will experience mental health problems that require specialist services (du Feu & Fergusson, 2003; Fellingner et al., 2012; Kvam et al., 2007). For example, deaf signers with schizophrenia may present with linguistic impairments in the context of thought disorder which are unparalleled in hearing populations (Chatzidamianos et al., 2018). Deaf people are more likely than the general population to experience abuse and they experience barriers in accessing the information needed to stay safe (SignHealth, 2020). Deaf populations are also more likely to suffer prolonged periods of traumatic abuse which could lead to specialised psychological and physical health needs (du Feu & Chovaz, 2014).

Deafness and intimate partner violence

Intimate partner violence (IPV) is a particular form of traumatic abuse. The Crime Survey for England and Wales estimated that 2.3 million adults were victims of domestic abuse between 2019 and 2020 (ONS, 2020). The impact of these behaviours on the victims' psychological well-being can be complex and severe. In hearing populations IPV has been associated with psychiatric conditions including post-traumatic stress disorder (PTSD) (Dardis et al., 2017; Desmarais et al., 2014; Fedovskiy et al., 2008), depression (Gomez-

Beloz et al., 2009; Hines & Douglas, 2016; Hughes et al., 2011), anxiety (Cerulli et al., 2012; Clements & Ogle, 2007), suicidal thoughts (Ali et al., 2013; Exner-Cortens et al., 2013), and eating disorders (Lacey et al., 2015; Svavarsdottir & Orlygsdottir, 2009). The prevalence of IPV within deaf populations has been found to be higher than in the general population, with estimates as high as: 91% for emotional/psychological IPV (Anderson & Leigh, 2011), 61% for sexual IPV (Anderson & Leigh, 2011), and 53.8% for physical IPV (Pollard et al., 2013).

Deaf people are likely to have problems accessing healthcare services to treat resultant disorders. For example, they experience informational deprivation at every personal and societal level (Mastrocinque et al., 2017), which impacts their ability to comprehend, respond, and seek help for IPV. This means that they may not recognise or identify abuse when it occurs and may be underrepresented in clinical samples, which are often used to research the impact of IPV. These problems are likely to be associated with early life experiences of deaf people, especially if they are not exposed to adequate and appropriate language provision, such as sign-language, from an early age.

Deafness and adult attachment style

Early life experiences are thought to influence the prevalence and outcomes of IPV. Attachment theory (Bowlby, 1971) posits that infants develop a working model of future relationships based on early attachment figures. This working model influences responses to attachment figures and can identify patterns of security and insecurity in these relationships with two underlying dimensions – attachment anxiety and avoidance (Ainsworth et al., 1979). Adults rely on romantic partners for security and the fulfilment of emotional needs. Adults also form mental representations about the self and others, and these views are linked with how they relate to attachment figures (Feeney, 2016). Insecure attachment styles have been shown to have positive associations between victimisation measures of physical abuse, psychological abuse, and sexual coercion (Bonache et al., 2016; Sommer et al., 2016). They

have been shown to moderate the relationship between IPV and PTSD (Scott & Babcock, 2010), and IPV and depression (La Flair et al., 2015; Smagur et al., 2018).

Attachment theory emphasises the importance of the relationship between a child and their primary attachment figure in early life. Ninety percent of deaf people are born to hearing parents (Mitchell & Karchmer, 2004), the majority of whom do not know sign language and may have limited opportunities to learn sign language (WFD, 2016a; 2016b). Barriers to parents learning sign language include the financial burden of lessons, poor access to teaching or resources, and inconsistencies between different providers of sign language lessons (Flaherty, 2015; Lieberman et al., 2022; National Deaf Children's Society, 2022; Weaver & Starner, 2011). This means they are likely to experience unique difficulties in developing relationships; deaf children who are most competent in social, cognitive, and language development are those who are able to participate actively in linguistic interactions with their parents (Marschark & Clark, 1993). However, evidence for the impact of poorer communicating dyads upon attachment is mixed (Vaccari & Marschark, 1997). Recent research suggests that having a hearing parent to a deaf child does not, in itself, result in insecure attachment patterns (McKinnon et al., 2004). However, this area is under researched and does not consider the nuances of hearing-deaf dyadic relationships in parent-child relationships. Whereas evidence from early intervention studies has found that maternal communication skill can predict social-emotional development in deaf children (Calderon, 2000).

Language experiences of deaf people

There are a range of factors that can affect the development of deaf children born to hearing parents (Morgan et al., 2021). For example, hearing parents of deaf children may learn sign language at a lower quality than sign fluent parent, which can affect language development in deaf children (Lu et al., 2016). Since the introduction of new-born hearing

screening in 2006, most deaf children in the UK are diagnosed before the age of 6 months and, if eligible, medical intervention can be offered. Deaf children who receive cochlear implants prior to the age of three develop speech processing abilities in advance of those predicted for a child without cochlear implants (Stacey et al., 2006). However, having a cochlear implant is not equivalent to natural hearing and children with cochlear implants show poorer educational and language outcomes than the general population (Lyness et al., 2013). The first five years of life represents the critical period for language acquisition (Mayberry & Lock, 2003; Newport, 1990), within this period there is a high degree of brain plasticity. Delays in language acquisition during this period affect the development of neurolinguistic structures, particularly impacting the development of grammar and second language acquisition (Skotara et al., 2012).

In cases where early language exposure is severely restricted, the impact on neurological development can result in irreversible difficulties in fundamental linguistic skills (Hall, 2017). This language deprivation may be especially present in prelingually deaf people born to hearing parents and who are situationally deprived of access to sign languages in early life (Glickman & Hall, 2018). This often results in those deaf children experiencing fund of knowledge deficits in adult life (Mastrocinque et al., 2017). In the context of IPV, this can impact a deaf person's ability to recognise abuse and seek help (Anderson & Pezzarossi, 2012; Schild & Dalenberg, 2016). For example, in a recent qualitative report on domestic abuse in deaf adults, participants reported that when they were first exposed to the term 'domestic abuse', they thought it referred to cleaning services (Chatzidamianos, 2022).

Rationale and hypotheses

It is important to better understand how the experiences of IPV might correlate with the psychological needs of the deaf population. Although some research has focussed on the

area of IPV in the deaf population, the impact of attachment style and early experiences of language on the psychological well-being of deaf victims of IPV remains unclear.

Consequently, this study aimed to analyse the relationship between IPV, and subsequent psychological well-being in deaf people. Specifically, this study hypothesised the following:

1. Frequency of IPV victimisation would correlate with psychological well-being in deaf populations and would be associated with it in a hierarchical regression model.
2. The inclusion of adult attachment style and early language experiences along with IPV victimisation in deaf populations would significantly account for more variance in well-being.
3. An earlier age of deafness would be associated with IPV victimisation and well-being. This is hypothesised given that those with an earlier age of deafness (particularly those who became deaf before the age of five) are more likely to experience difficulties in recognising and labelling abuse and may have more barriers in seeking help to alleviate the distress resulting from abuse.

Method

Design

The study was quantitative and correlational in design. Data were collected cross-sectionally through an anonymous online questionnaire hosted by Qualtrics experience management software (Qualtrics, 2020).

Participants

An a priori power analysis was conducted using G*Power version 3.1.9.6 (Faul et al., 2007) to determine the minimum sample size required. Results indicated the required sample

size to achieve 80% power for detecting a medium effect for a hierarchical regression with 7 predictors, at a significance criterion of $\alpha = .05$, was $N = 103$ with no upper limit.

Participants were recruited through opportunity sampling via gatekeeper facilitation across several social media platforms and mailing lists. These included d/Deaf¹ specific charities (including health and well-being focussed charities, but not direct providers of health services such as the NHS), Deaf cultural organisations, d/Deaf specific media outlets, and d/Deaf specific social media groups. Whilst the study was based in the UK, several gatekeepers operated across national borders and represented groups in other countries. Although geographical data were not requested from participants, national sign language use was recorded.

Participants were included if they identified as deaf adults (aged 18 or above) of any gender. They were also included if they had received medical intervention to improve hearing or used amplification devices, such as cochlear implantation, or hearing aids. Participants were included if they were currently in an intimate relationship or if they had previously been in an intimate relationship. Participants were excluded if they had not previously been in an intimate relationship. This exclusion criterion was necessary to ensure the sample was relevant to the research question which relates to experiences of IPV.

Materials

Consideration was given to the unique needs of the deaf population to ensure accessibility and suitability of materials. Deaf populations have been identified as having greater difficulty accessing health related literacy (McKee et al., 2015) and around 60% of deaf sign language users read between the 3rd and 6th US school grade (Lavigne & Vernon, 2003). Measures were assessed for readability using the Flesch-Kincaid reading score to

¹ A collective noun including both “Deaf” people who identify with the Deaf culture, and “deaf” people who do not.

assess suitability. The Flesch-Kincaid reading ease score gives a total index score out of 100, with higher scores indicating material that is easier to read (Flesch, 1948). A score of 80/100 corresponds to a 6th grade (age 11-12) reading level. All material within this study demonstrated a reading ease score of 80 or higher.

World Health Organisation 5 well-being index (WHO-5)

The WHO-5 (WHO, 1998) was used to collect data for the outcome variable of subjective psychological well-being.

It is a 5 item, self-report measure of current mental well-being and consists of five statements which respondents rate using 6-point Likert scales according to their experiences over the previous two weeks. Throughout recruitment the author noted a clerical error resulting in the measure being presented as a 5-point Likert scale from 0 (None of the time) to 4 (Most of the time).

A total raw score was calculated by summing each of the five responses (range 0-20), a percentage score was gained by multiplying the raw score by five, with 0% representing the worst imaginable well-being and 100% representing the best imaginable well-being.

The WHO-5 has been found to have a high level of content validity; it produced a content validity ratio of .80 (Hall et al., 2011) in community samples, Cronbach's alpha scores have indicated reliable test score interpretations ($\alpha = .84$) (Bech et al., 2003). The items of the WHO-5 demonstrated a Flesch-Kincaid reading ease level of 90/100, meaning it was likely to be accessible to deaf populations.

Conflict Tactics Scale – Revised (CTS2) – victimisation scale

The CTS2 (Straus et al., 1996) was used to collect data regarding IPV, with subscales of psychological aggression, physical assault, sexual coercion, and injury.

The CTS2 is designed to measure the nature and frequency of tactics used to manage conflict in an intimate relationship. The scales consist of 39 item pairs which assess how

frequently participants have been a victim (victimisation scale) or a perpetrator (perpetration scale) of each act. This study used only the victimisation scale as the experiences of perpetration were outside of the scope of the research question and inclusion of the perpetration items was likely to negatively impact the response rate. The CTS2 has been found to produce valid and reliable test score interpretations across a range of populations and cultures (Chapman & Gillespie, 2019). Within deaf populations, a factor analysis has found that the victimisation scales loaded most highly onto their original scales and Cronbach's alpha scores showed moderate to high levels of internal consistency ($\alpha = .62 - .92$) (Anderson & Leigh, 2010).

To present only the CTS2 victimisation questions it was necessary to modify some of the items to make them accessible to the deaf audience. Otherwise, participants would need to base their response on their ability to process exophoric reference² across two consecutive items. This would unnecessarily increase the associated cognitive load and risk obtaining a response that does not reflect their opinion and could result in participants withdrawing from the study. Items were adapted as the example below:

Original CTS2 questions 7 and 8:

7: I threw something at my partner that could hurt.

8: My partner did this to me.

Adapted to present victimisation scale only:

My partner threw something at me that could hurt.

The CTS2 required respondents to rate the number of times they experienced IPV behaviours over the past year. The response categories are: *Never, once in the past year, twice in the past year, 3–5 times in the past year, 6–10 times in the past year, 11–20 times in*

² This is a level of linguistic knowledge that is not widely available to people who have been deaf from early life.

the past year, more than 20 times in the past year, and not in the past year, but it did happen before. Yearly frequency was scored by summing the mid points for the response categories chosen. A dichotomous prevalence score of IPV victimisation was also calculated by assigning a score of one if a participant had ever experienced at least one item of a subscale and a score of zero if they had not.

After the adaptation of these items, the CTS2 victimisation scale received a Flesch-Kincaid reading ease score of 85.5/100 which, meaning it is likely to be accessible to deaf populations.

Experiences in Close Relationships Questionnaire – Short Form (ECR-S)

The ECR-S (Wei et al., 2007) was used to measure adult attachment styles. It is a 12 item self-report adult attachment style questionnaire focussed on close relationships. The measure is a shortened version of Brennan et al. (1998)'s Experiences in Close relationships Scale.

Responses are given across a 7-point Likert scale from 1 (strongly agree) to 7 (strongly disagree). The ECR-S gives scores on the two factors of avoidant and anxious attachment style. The minimum score for each scale is 7 and a maximum score of 42, with higher scores indicating more insecure attachment in one or both domains.

Wei et al. (2007) demonstrated construct validity for ECR-S through significant correlations for attachment anxiety with emotional reactivity ($r = .41$). and attachment avoidance with emotional cut-off ($r = .59$). A factor analysis from the same study confirmed a two-factor structure (anxiety and avoidance) and it has demonstrated good internal consistency in IPV studies ($\alpha = .65 - .69$) (Karlijn F. Kuijpers et al., 2012). The ECR-S had a Flesch-Kincaid reading ease score of 80/100, meaning the ECR-S may be generally accessible to the deaf population.

Demographics questionnaire

An enhanced demographics questionnaire collected data for the variables of early language experiences. Orfanidou et al. (2015) indicate that studies addressing the factors that impact early language acquisition within the deaf population should use an extended and comprehensive demographics questionnaire. This collected information about the participants age of deaf diagnosis, use of sign languages (including national sign languages and idiosyncratic ‘home signs’), age of first exposure to sign languages, use of hearing amplification, parental hearing status, and access to sign support at school. The questionnaire can be found in Section Four: Ethics and Appendices.

Procedure

The study was advertised to participants by gatekeepers through their mailing lists, social media pages or social media groups with the permission of administrators. Advertisements were provided in textual form and accompanied by a BSL translation outlining the participant information.

Participants were directed towards the online survey where they were presented with a participant information sheet which outlined the study rationale and relevant information and avenues of support.

Contact details for the researchers, university research department, and ethics committee were given. Inclusion and exclusion criteria were outlined as well as informing the participants that participation was voluntary and anonymous. Participants’ right to withdraw was explained, and they were informed that once they had completed the survey, their responses could not be withdrawn. Participants were asked to confirm that they have read and understood the information and associated risks.

The entirety of the participant information sheet and informed consent page were also translated into BSL by a Deaf interpreter and videos embedded within the relevant pages of the online survey.

Participants who consented were first presented with the enhanced demographics questionnaire and they were asked if they considered themselves a survivor of domestic abuse. Participants were then presented with the WHO-5, CTS2 victimisation scales, and ECR-S. The order the measures were presented was randomised to control for order effects. Instructions for each measure were also provided in video recorded BSL translation.

Upon completion of the survey, participants were presented with a debrief page where relevant information for support services was reiterated. The debrief page was also provided in video recorded BSL translation.

Ethical considerations

Ethical approval was granted by the Lancaster University Faculty of Health and Medicine Research Ethics Committee (reference: FHMREC 21045). A copy of the email granting ethical approval for this study is attached in Section Four: Ethics and Appendices.

Efforts were made to ensure that informed consent was given by every participant. The potential for participants to experience distress and the nature of questions around IPV were considered and content warnings were given. Details of relevant deaf specific and general domestic abuse services and resources were detailed. Participants were also given information around ways to hide their online activity should they feel the need to do so; a full list of these can be seen in the study protocol appended in Section Four: Ethics and Appendices. Following the participant information sheet, participants were asked to confirm that they consented to their data being used in the research. Participants were not able to complete the survey without consenting. All data were recorded anonymously and stored securely on password protected software.

Analysis

Data were downloaded and inputted into SPSS statistical analysis software (IBM Corp, 2021). There were no participants with missing data. Internal consistency of the sample

was assessed for the WHO-5, ECR-S, and CTS2 victimisation scales before descriptive statistics were produced and interpreted.

Ordinal and scale data were assessed for suitability of correlational analysis by the guidelines suggested by Goodwin and Leech (2006). Likert data were deemed suitable as suggested by Norman (2010). Linearity of data was assessed by inspecting scatterplots (Appendix A). Normality of distribution was assessed by inspecting frequency histograms (Appendix B), Probability-Probability plots and Quantile-Quantile plots (Appendix C). Inspection of these plots indicated that All CTS2 frequency scales, age of deaf diagnosis, and age of exposure of sign language appeared to violate assumptions of normality. Standardised skewness and kurtosis values can be seen in Table 1. These variables were positively skewed and platykurtic with standardised values above 1.96 (Field, 2018). Inspection of Kolmogorov-Smirnov statistic confirmed that these were statistically different from a normal distribution.

INSERT TABLE 1 HERE

These variables may be representative of the population even though they differed from a normal distribution. Positive skewness is a recognised phenomenon in measuring the frequency of intimate partner violence in community samples (Straus, 2006). It was deemed that the removal of outliers would not address the issue of normal distribution, therefore it was decided that a non-parametric correlational analysis would be appropriate using Spearman's rank order correlational coefficient.

Data were further assessed for suitability of hierarchical linear regression analysis. The assumption of homoscedasticity was assessed by reviewing scatter plots of standardised residual and predictor variables. The variables of CTS2 frequency scales were found to be

heteroscedastic (Appendix D). A square root transformation was applied to these variables to reduce the heteroscedasticity within the model.

Predictor variables were assessed for multicollinearity. Physical assault frequency and injury frequency showed significant multicollinearity with a variance inflation factor greater than 10 indicating a cause for concern (Menard, 2002). It was deemed suitable to remove injury frequency from the first regression model for this reason.

A priori regression models were used to hierarchically test predictors of well-being. IPV victimisation and mental health outcomes are known to be associated (Spencer et al., 2019). Attachment avoidance and anxiety were entered next on the basis that adult attachment has previously been found to relate to mental health outcomes (La Flair et al., 2015; Scott & Babcock, 2010; Woodward et al., 2013). The relationship between early language experiences in deaf people and well-being are less well known. People who are born deaf or are diagnosed during the critical period for language acquisition can experience language deprivation which can impact how deaf people understand and respond to traumatic experiences (Glickman & Hall, 2018; Hall, 2017; Schild & Dalenberg, 2012). In the absence of a language deprivation scale for deaf adults, age of receiving a diagnosis of deafness and age at which they started learning sign languages were added third into the model. Finally, dummy variables relating to years of exposure to sign languages from parents and school were entered fourth into the model.

Supplemental inter-group tests of difference were conducted between prelingually and post-lingually deaf groups and between male and female genders. The age of five years old was chosen as a cut off for pre-lingual deafness, which is consistent with other research in deafness, language deprivation, and mental health (Glickman & Hall, 2018; Hall, 2017; Hall et al., 2017). Cross-tabulation was used to analyse differences between the dichotomous variables for prevalence of IPV between groups. T-tests were used to analyse differences

between groups for the variables of well-being, attachment anxiety, and attachment avoidance.

Results

In total, 63 participant responses were returned. Of these, 46 (73%) were female, 16 (25.4%) were male, and 1 (1.6%) preferred not to disclose their gender identity. Age was recorded as an ordinal variable, with participants with a range between the categories of 18-20 years old to 81-90 years old, with the most common category being 41-50 years old.

Age of receiving a deaf diagnosis ranged from 0 – 52 ($M = 7.12$, $SD = 13.81$). 52 (82.5%) used sign language. 41 (65.1%) were currently in a relationship, 22 (34.9%) were not currently in a relationship but had been previously. Full demographic details can be seen in Table 2.

INSERT TABLE 2 HERE

Overview and descriptive statistics

CTS2 victimisation scales. ECR-S scales and WHO5 well-being scales were computed and assessed for internal consistency and reliability. Cronbach's alpha (α) coefficients for each scale are shown in Table 3. These showed all measures to be of acceptable reliability, with coefficients above .70 (Gliem & Gliem, 2003). The CTS2 sexual coercion victimisation scale and psychological aggression victimisation scale showed higher coefficients than in previous research with the deaf population (Anderson & Leigh, 2010). Coefficients for ECR-S and WHO5 scales were similar to previous research (McDowell, 2010; Wei et al., 2007).

INSERT TABLE 3 HERE

Descriptive statistics for means and standard deviations for variables of well-being, adult attachment style, and IPV victimisation frequency can be seen in Table 4. The CTS2 scales were also used to compute dichotomous lifetime prevalence scales of physical assault, psychological aggression, sexual coercion, and injury. In total 43 (68.3%) participants self-identified as a survivor of domestic abuse. When prevalence of IPV was measured by CTS2 responses, 60 (95.2%) participants were identified as having experienced at least one of the CTS2 victimisation items, suggesting that they have experienced some form of IPV during their lifetime. 40 (63.5%) participants were found to have had at least one experience of physical assault. 37 (58.7%) participants were found to have had at least one experience of sexual coercion. 57 (90.5%) participants were found to have had at least one experience of psychological aggression.

INSERT TABLE 4 HERE

Spearman's rank correlations

Non-parametric correlational analysis was conducted with the variables of well-being, IPV victimisation (physical assault, injury, psychological aggression, and sexual coercion), adult attachment style (anxious and avoidant), age of deafness, and age of exposure to sign language (see Table 5). Well-being was not significantly associated with any other variables. Attachment avoidance was positively and moderately associated with injury, and all IPV victimisation scales. Attachment anxiety was negatively associated with both age of deafness and age exposed to sign languages.

INSERT TABLE 5 HERE

Hierarchical regression analysis

Three hierarchical regression analyses were conducted with each model regressing a different form of IPV victimisation:

Model one contained physical assault victimisation. Using the sequential method a non-significant model emerged, $F(10, 41) = .91, p = .534$. The model explains 18% of the variance in the subjective levels of well-being reported by participants ($R^2 = .18$). The contribution of each predictor variable in accounting for the variance in subjective levels of well-being are shown in Table 6. Attachment avoidance was found to be a significant single predictor in step 3 and step 4 of the model.

INSERT TABLE 6 HERE

Model two contained psychological aggression victimisation. Using the sequential method a non-significant model emerged, $F(11, 41) = .82, p = .619$. The model explains 18% of the variance in the subjective levels of well-being reported by participants ($R^2 = .18$). The contribution of each predictor variable in accounting for the variance in subjective levels of well-being are shown in Table 7. Attachment avoidance was found to be a significant single predictor in step 3 and step 4 of the model.

INSERT TABLE 7 HERE

Model three contained sexual coercion victimisation. Using the sequential method a non-significant model emerged, $F(11, 41) = .94, p = .514$. The model explains 20% of the variance in the subjective levels of well-being reported by participants ($R^2 = .20$). The contribution of each predictor variable in accounting for the variance in subjective levels of well-being are shown in Table 8. Attachment avoidance was found to be a significant single predictor in step 3 of the model.

INSERT TABLE 8 HERE

Differences between prelingually and post-lingually deaf participants.

Cross-tabulation was used to identify if lifetime prevalence of IPV was significantly associated with prelingual or post-lingual deafness. The observed values can be seen in Table 9. The chi squared test confirmed that there was no statistically significant relationship between the prelingual and post-lingual groups and lifetime prevalence of physical assault: $\chi^2(1, N = 63) = .66, p = .417$; psychological aggression: $\chi^2(1, N = 63) = .65, p = .419$; sexual coercion: $\chi^2(1, N = 63) = .05, p = .817$; Injury: $\chi^2(1, N = 63) = .03, p = .870$.

INSERT TABLE 9 HERE

Independent samples t-tests were used to assess if there was a statistically significant difference between prelingually deaf (before the age of six) and post-lingually deaf (aged six and older) groups for normally distributed variables of well-being (WHO5), Attachment Avoidance and Attachment Anxiety (ECR-S).

Post-lingually deaf participants had higher levels of well-being as measured by the WHO5 ($M = 58.85, SE = 5.35$) than prelingually deaf participants ($M = 48.30, SE = 3.60$). However, this difference was not significant $t(61) = -1.39, p = .085$.

Post-lingually deaf participants had higher levels of attachment avoidance as measured by the ECR-S ($M = 22.69, SE = 2.88$) than prelingually deaf participants ($M = 22.20, SE = .93$). This difference was not significant $t(61) = .21, p = .437$.

On average, post-lingually deaf participants had lower levels of attachment anxiety as measured by the ECR-S ($M = 21.54, SE = 2.12$) than prelingually deaf participants ($M = 25.26, SE = 1.18$). This difference was not significant $t(61) = -1.45, p = .075$.

Differences between male and female genders

Cross-tabulation was used to identify if lifetime prevalence of IPV was significantly associated with male or female gender. The observed values can be seen in Table 10. The chi squared test confirmed that there was no statistically significant relationship between gender and lifetime prevalence of physical assault: $\chi^2 = (1, N = 62) = .04, p = .845$; psychological aggression: $\chi^2 = (1, N = 62) = .10, p = .757$; sexual coercion: $\chi^2 = (1, N = 62) = .07, p = .789$; or injury: $\chi^2 = (1, N = 62) = .04, p = .845$.

INSERT TABLE 10 HERE

Independent samples t-tests were used to assess if there was a statistically significant difference between male and female groups for normally distributed variables of well-being (WHO5), attachment avoidance and attachment anxiety (ECR-S).

Male participants had higher levels of well-being as measured by the WHO5 ($M = 54.69, SE = 6.32$) than female participants ($M = 50.11, SE = 3.47$). This difference was not significant $t(60) = .66, p = .257$.

Male participants had lower levels of attachment avoidance as measured by the ECR-S ($M = 21.81, SE = 1.85$) than female participants ($M = 22.43, SE = 1.12$). This difference was not significant $t(60) = -.28, p = .389$.

Male participants had higher levels of attachment anxiety as measured by the ECR-S ($M = 24.88, SE = 2.18$) than female participants ($M = 24.63, SE = 1.20$). This difference was not significant $t(60) = .10, p = .460$.

Discussion

The current study investigated whether experiences of IPV, adult attachment style, and early language experiences were correlated with well-being in a sample of deaf adults. Hypothesis 1 was that IPV victimisation would be associated with well-being in a regression model. There was no significant evidence to support this. The non-significant results were surprising considering the relationship between IPV and well-being in hearing populations (Cations et al., 2021; Hassan & Malik, 2012; Hegarty et al., 2013), including research which has used the WHO5 as an outcome measure (Bogolyubova et al., 2017; Bunga et al., 2022).

The second hypothesis was that a model of IPV victimisation, adult attachment style, and experiences of language access in early life would significantly improve the predictive value of psychological well-being in the regression model. The analyses indicated that none of these models were statistically significant.

Several factors may have contributed to the lack of support for the first two hypotheses. The effect sizes of the regression models were small, with f^2 values less than .15 (Cohen, 1992). A post hoc power analysis indicates that this study is underpowered with a minimum sample size of 570 needed. It is also likely that the measurement of IPV frequency by the CTS2 has diluted the effect size. Skewness in the measurement of IPV frequency has been previously noted due to a higher proportion of the sample not experiencing IPV (Sung Hyun, 2010). Such difficulties are unavoidable in IPV research (Vega & O'Leary, 2007).

However, the use of a community based, non-clinical, sample is likely to have increased this skewness, leading to a reduced effect size in the final models. The fact that the sample was self-selected and perhaps included mainly participants with personal experience of domestic abuse may have restricted the potential range of scores further.

All three regression models indicated that attachment avoidance became the only statistically significant partial predictor of well-being when combined with IPV frequency, injury, age of deafness, and age of exposure to sign languages. Univariate analysis also indicated that attachment avoidance was significantly associated with IPV frequency and injury as measured by the CTS2, with small to medium effect sizes (Carson, 2012). The univariate correlations from this study show a stronger relationship between attachment avoidance and IPV than are found in hearing populations (Stefania et al., 2023). Notably there were no significant univariate correlations between attachment anxiety and IPV victimisation, which Stefania et al. (2023) found to be similar to attachment avoidance in hearing populations.

There are few studies addressing the impact of deafness on attachment style. These studies have found conflicting results for differences between prelingually deaf and hearing participants (McKinnon et al., 2004; Weisel & Kamara, 2005). What is apparent, is that prelingually deaf people are likely to experience early interpersonal and developmental trauma which may influence their relational style (Anderson et al., 2016).

Investigating adult attachment style's association with IPV victimisation was outside the scope of the current study and was not subjected to further analysis. However, the differences between the significant univariate analyses within this study and those found in the hearing population research should be further considered. Attachment theory conceptualises that attachment avoidance results in less conscious awareness of emotional states, and people with avoidant attachment style are more likely to mask their emotional

states and may be avoidant of intimacy in relationships (Mikulincer et al., 2003). It has been suggested that people with avoidant attachment styles may be more likely to experience IPV as a result of mutual violence between partners (Velotti et al., 2018). People with higher levels of attachment avoidance may use evasive communication strategies which might result in IPV as anxious partners make dysfunctional attempts to maintain a relationship (Karlijn F Kuijpers et al., 2012).

Within deaf populations, the use of attachment-related communication strategies may not be as clear. Communication ability and negotiation within relationships may also be influenced by language modality and ability. Communication problems are associated with increased probability of IPV (Medeiros & Straus, 2006). For partners in a hearing-deaf relationships, where communication modality and fluency may not be equal, there is an increased risk of conflict. Particularly where a hearing privilege creates a power imbalance through a majority-minority dynamic (Anderson & Kobek Pezzarossi, 2014). For example, removal of communication methods for deaf people by hearing partners has been identified as a specific form of abuse in hearing-deaf relationships (Mastrocinque et al., 2017).

Furthermore, the deaf population is heterogeneous, and experiences of language acquisition and language ability are diverse. People who have acquired deafness post-lingually may experience psychosocial stressors in relationships due to a change in communication strategies (Hallam et al., 2008). Whereas people with prelingual deafness can experience language dysfluency, low self-esteem, social isolation, and lack of a Deaf peer group, which can present risk factors for subsequent abuse (Ridgeway, 1993). The results from the present study indicated that attachment anxiety was significantly and negatively associated with the age deafness was diagnosed and age of exposure to sign languages, but none of these variables had a significant relationship with IPV victimisation or well-being. This could suggest that further understanding how early language experiences interact with

attachment style in the context of interpersonal conflict would be a useful area of focus in deaf IPV research.

The finding that early language experiences were not associated with well-being and did not significantly account for variance in the regression models is notable. The evidence base regarding deaf specific predictors in the context of IPV is small. However, Anderson (2010) found that some deaf specific predictors, such as school setting and best language, took precedence over traditional predictors of IPV victimisation. The current study found that similar variables (including school setting, parental hearing status, and age of sign language exposure) were not associated with well-being when combined with IPV victimisation and attachment style in the regression models. Within the hierarchical model there was a smaller change in the variance accounted for in well-being than when attachment style was included. This would suggest that whilst early language experiences in deaf populations might be associated with the likelihood of IPV victimisation, they may not have a direct relationship with how these experiences influence psychological well-being.

The language variables included in the current study are related to early language experiences which are known to influence language development in prelingually deaf people (Cheng et al., 2019; Orfanidou et al., 2015). Prelingually deaf people who experience a significant lack of language exposure in early life may experience language deprivation syndrome (Hall et al., 2017). This potential neurodevelopmental disorder can impact emotional regulation (Glickman, 2008; Glickman, 2013; Glickman & Hall, 2018). Prelingually deaf people may also have a reduced fund of information (Hall, 2017), which may impact their ability to understand and respond to traumatic events, resulting in a lower threshold for post-traumatic symptoms (Schild & Dalenberg, 2012). However, the presence of language deprivation cannot be proven or disproven simply by measuring the presence or absence of these early language experiences. The results from the current study indicate that

understanding these experiences as independent factors of language development are unlikely to provide accurate prediction of deaf people's well-being. The role of culturally appropriate methods of understanding the relationship between language deprivation and the treatment of mental health in deaf specific services has been described by Glickman (2007). But the results from the current study indicate that the relationship between IPV, attachment style, and language experiences/ability may also benefit from a more nuanced and considered understanding in relation to the psychological well-being of deaf people. A scale that is specifically developed to assess language deprivation would help develop this understanding. The enhanced sociodemographic questionnaire in the present study was unlikely to do this in a sufficient way to fully address the nuance of all early language experiences.

Differences between prelingually and post-lingually deaf

The third hypothesis of this study was that an earlier age of deafness would be associated with IPV victimisation and well-being. There were no statistically significant differences in IPV prevalence between prelingually and post-lingually deaf participants. There were also no statistically significant differences between these groups in terms of attachment style or well-being. Notably there were also no significant gender differences across the same variables, which differs from traditional IPV research (Dobash & Dobash, 1979; Hester et al., 1996). Although, this study lacked representation from genders other than people identifying as either male or female. It may be possible that the power dynamics which contribute to perpetrator–victim relationships in deaf IPV are influenced by factors which are not easily categorised into group analysis.

The traditional view of IPV is of male perpetration and female victimisation (Dobash & Dobash, 1979; Hester et al., 1996). However, bi-directional abuse has been consistently found in studies recruiting both partners in hearing populations (Lawrence et al., 2009; Renner et al., 2014). The evidence base has a greater focus on female victimisation in

heterosexual relationships, whereas victimisation in male populations, transgender groups, and LGBTQ+ relationships is less researched (Laskey et al., 2019). Some studies have found that men may be just as likely to experience IPV victimisation, and more likely to stay in abusive relationships than women (Ahmadabadi et al., 2017). One approach to understanding the gender differences apparent in the IPV evidence base is to consider that IPV victimisation is influenced by power within a relationship and that cultural factors often ascribe power to males in heterosexual relationships (Caldwell et al., 2012). The experience of deafness, either prelingually or post-lingually, are likely to represent a power dynamic which is influenced by societal and individual attitudes towards deaf people, resulting in them holding less power and agency as well as experiencing greater levels of oppression (Bauman, 2004; Frank, 2019; Leigh, 2004). It may be that the power imbalances within the relationships of deaf people due to their communication needs and their status as a minority group influence the patterns of IPV victimisation differently to hearing victims of IPV. These power imbalances are likely to interact with other demographic factors and the exact nature of how this operates in IPV victimisation should be a focus of future research.

Differences between deaf and hearing populations in prevalence of IPV

This study identified a lifetime prevalence of IPV of 95.2% across the sample. With most of the sample having experienced at least one incidence of psychological aggression during their lifetime (90.5%), then physical assault (63.5%), and then sexual coercion (63.5%). The lifetime prevalence of IPV victimisation in the current study was similar to other research using the CTS2 in deaf college student samples (Anderson & Leigh, 2011). But it found higher rates than in larger population studies, such as Pollard et al. (2013). The current study represents a community based, non-clinical, sample and the results add to the evidence that prevalence of IPV victimisation may be higher in deaf populations than in the general. However, given the nature of the survey, the sample is likely self-selected, and this

figure may be inflated because those interested in or affected by the topic may have been particularly motivated to take part. This may also account for some of the difference between the prevalence reported in this study and others. National surveys for the UK place domestic abuse prevalence between 12.1% and 23.5% (Parveen et al., 2021). One potential factor in the disparity between reported IPV rates in deaf populations could be related to measurement validity. Studies using surveys designed to understand population health, such as Barnett et al. (2011) and Pollard et al. (2013) rely on a small number of items which may be more reliant on the responder being able to recognise behaviours as abusive. Whereas studies focussing on IPV make use of measures, such as the CTS2, which measure a greater range of IPV behaviours. Previous research noted that deaf female college students may be not label IPV experiences as abusive unless they conformed to concepts of severe injury (Anderson and Pezzarossi (2012)). The present study found that 68.3% of participants self-identified as survivors of domestic abuse, which is substantially lower than the total prevalence reported through the CTS2 measure. This supports Anderson and Pezzarossi (2012)'s notion that deaf populations may not label IPV experiences as abusive and indicate the need for IPV awareness programmes within the deaf community.

Clinical implications and future directions

The results from the current study have clinical implications for services working with deaf people who have experienced IPV. It is suggested that the attachment style of deaf IPV victims is likely to hold a unique relationship with their well-being and risk of experiencing IPV. This could suggest that interventions for deaf IPV victims could make use of theoretical models which focus on relational, attachment focussed concepts. Whilst the study has found that the inclusion of early life experiences does not significantly account for variance in their well-being, it is further suggested that this may support the use of clinically and culturally informed assessments of language deprivation in deaf service users where

possible. Furthermore, the current study supports the use of well validated measures to understand and identify IPV in deaf service users, as self-report alone is likely to produce underestimates. These considerations are made tentatively, with the understanding that the research in this area is limited and the population generally underserved. Future research should explore the relationship between adult attachment style and IPV and may utilise clinical populations and focus on the differences between deaf populations, such as prelingually deaf groups and culturally Deaf populations to better understand the nuances of this often minoritised group of people.

Limitations

This study has several limitations and results should be interpreted cautiously. Although every effort was made to recruit participants, the study utilises a small, self-selected sample which means the results cannot be confidently generalised to the wider population. Non-response bias is a noted difficulty with survey style research in health sciences (Halbesleben & Whitman, 2013), which is likely to be affected by concepts such as leverage-salience theory (Groves et al., 2004), which suggests that participants who are more interested in the topic of IPV respond more through opportunity sampling.

The primary outcome measure used a reduced scale range due to an administrative error and the scores of the measure may not be comparable to other studies using the WHO-5. The CTS2 was adapted to present only the victimisation scale, one impact of this adaptation is the removal of potential priming effects which may have influenced participants recall and subsequent responses (Tourangeau et al., 2000). However, this was considered acceptable to support the response rate and improve accessibility for deaf participants.

Some data were found to not be normally distributed, although the central limit theorem suggests that non-normally distributed data can still be representative of a population (Kwak & Kim, 2017) and skewness in community IPV studies is a recognised difficulty.

However, with the study's small sample size it is not possible to assume that the data are representative. The use of non-parametric analyses and square root transformations addressed these issues to some degree.

Conclusion

The current study did not find any evidence to support the hypothesis that a regression model of IPV victimisation, adult attachment style, and language experiences in early life was associated with psychological well-being. The only significant single predictor of well-being was attachment avoidance when included in a model of IPV frequency, injury, age of deafness, and age of exposure to sign languages. Attachment avoidance was also found to be correlated with all IPV victimisation scales and injury. This relationship is considered as an important area for future research as attachment related communication strategies may be influenced by the unique experiences of language in the deaf population. Supplemental analysis supported findings of other deaf IPV research which has found higher levels of IPV in the deaf population. It was surprising that no significant differences were found between prelingually and post-lingually deaf groups in IPV victimisation. It was considered that the experiences of the deaf population represent a range of nuanced and heterogeneous factors that influence power imbalances within relationships which theoretically underpin the relationship between IPV victimisation and perpetration. It is important for future research to develop well validated measures in deaf populations and not to rely on convenience or opportunity sampling given the inherent difficulties with measuring IPV in deaf populations.

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Table 1.

Tests of Normality for Variables of Age of Deafness, Age Exposed to Sign Languages, CTS2 Victimization Scales, WHO-5, and ECR-S.

	N	Skewness	Kurtosis	K-S
Age of deafness	63	7.8	7.36	.36***
Age exposed to sign language	52	3.21	.95	.17**
CTS2 scales				
Assault victimisation scale	63	9.99	14.18	.39***
Injury to self scale	63	9.38	12.9	.41***
Psychological aggression victimisation scale	63	7.8	9.11	.28***
Sexual coercion victimisation scale	63	13.18	25.85	.27***
Well-being	63	-.39	-1.04	.10
Attachment avoidance	63	.03	.99	.12*
Attachment anxiety	63	.41	-1.3	.09

Notes: * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 2.

Participant Demographics Including Age, Gender, Deaf Specific Demographics, Relationship Status, and Self-Identification as a Survivor of Domestic Abuse.

Demographic	N	%	M (range)	SD
Age				
18-20	2	3.2		
21-30	6	9.5		
31-40	16	25.4		
41-50	20	31.7		
51-60	11	17.5		
61-70	5	7.9		
71-80	2	3.2		
81-90	1	1.6		
Gender				
Female	46	73		
Male	16	25.4		
Preferred not to say	1	1.6		
Age when diagnosed as deaf (years)	63		7.12 (0 – 52)	13.81
Type of Amplification				
No amplification	15	23.8		
Traditional (behind the ear) hearing aids	32	50.8		
Cochlear implant	15	23.8		
Bone anchored hearing aid	1	1.6		
Participants who use sign language				
British Sign Language	32	50.8		
American Sign Language	12	19		
Auslan	5	7.9		
Irish Sign Language	1	1.6		
Homesigns	2	3.2		
Age when first used sign languages (years)	52		14.38 (0 – 51)	13.7
Currently in a relationship	41	65.1		
Not currently in a relationship but have previously been in a relationship.	22	34.9		
Consider themselves a victim of domestic abuse				
Economic abuse	21	33.3		

Demographic	N	%	M (range)	SD
Threats and intimidation	34	54		
Emotional abuse	41	65.1		
Sexual abuse	21	33.3		
Physical abuse	31	49.2		
Online abuse	9	14.3		

Table 3.

Cronbach's Alpha (α) Internal Reliability and Confidence Intervals for CTS2 Victimization Scales, ECR-S Attachment Anxiety and Avoidance Scales, and WHO5 Well-Being Scale.

Scale	<i>N</i>	α
CTS2 victimisation scale	39	.95 95% CI [.94, .97]
CTS2 assault victimisation scale	12	.92 95% CI [.89, .95]
Psychological aggression victimisation scale	8	.90 95% CI [.86, .93]
Sexual coercion victimisation scale	7	.91 95% CI [.88, .94]
Injury to self scale	6	.78 95% CI [.69, .86]
Negotiation scale	6	.70 95% CI [.57, .80]
ECR-S attachment anxiety scale	6	.76 95% CI [.65, .84]
ECR-S attachment avoidance scale	6	.72 95% CI [.60, .81]
WHO5	5	.91 95% CI [.87, .94]

Note. *N* = total number of items in each scale.

Table 4.

Means, Range, and Standard Deviations for Variables of Psychological Well-Being, Adult Attachment Style, and IPV Yearly Victimization Frequency.

Variable	M	Range	SD
Well-being (WHO5)	50.48	0-100	24.56
Attachment avoidance	22.3	6-42	7.45
Attachment anxiety	24.49	10-42	8.29
CTS2 yearly frequency scales			
Assault victimisation	20.51	0-235	53.38
Psychological aggression victimisation scale	25.37	0-183	43.9
Sexual coercion victimisation scale	10.7	0-156	30.95
Injury to self scale	7.95	0-92	19.63

Table 5.

Spearman's Rho Correlations Matrix for Variables of Well-Being, IPV Victimization, Adult Attachment Style, Age of Deafness, and Age Exposed to Sign Languages.

Variable	<i>n</i>	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8
1. Well-being	63	50.48	24.56								
2. Physical assault	63	20.51	53.38	-.23 [-.46, .03]							
3. Psychological aggression	63	25.37	43.89	-.12 [-.36, .14]	.75* [.61, .84]						
4. Sexual coercion	63	10.70	30.95	-.12 [-.37, .14]	.61** [.41, .75]	.37** [.12, .57]					
5. Injury	63	7.95	19.63	-.21 [-.44, .05]	.88** [.80, .92]	.75** [.61, .84]	.53** [.32, .69]				
6. Attachment avoidance	63	22.30	7.45	-.23 [-.46, .02]	.38** [.14, .58]	.44** [.21, .63]	.42** [.23, .64]	.46** [.23, .64]			
7. Attachment anxiety	63	24.49	8.29	-.05 [-.30, .21]	.02 [-.24, .27]	.17 [-.09, .41]	-.08 [-.22, .29]	.04 [-.22, .29]	.22 [-.04, .45]		
8. Age of deafness	63	7.12	13.81	.07 [-.18, .32]	.00 [-.25, .26]	.04 [-.22, .29]	-.05 [-.30, .21]	.07 [-.19, .32]	.02 [-.24, .27]	-.26* [-.48, -.00]	
9. Age exposed to sign languages	52	14.38	13.70	.13 [-.16, .40]	.04 [-.31, .25]	-.18 [-.44, .11]	.01 [-.27, .29]	.86 [-.26, .30]	.00 [-.29, .28]	-.57** [-.73, -.34]	.64** [.44, .78]

Note: * $p < .05$. ** $p < .01$.

Table 6.

Summary of Hierarchical Regression Analysis for Assault Frequency, Insecure Adult Attachment Style, and Experiences of Language Exposure Predicting Well-Being.

Variable	<i>b</i>	<i>Standard error of b</i>	β	<i>t</i>	<i>p</i>	Zero-order <i>r</i>	Squared semipartial (<i>sr</i> ²)	<i>R</i> ²	Adj <i>R</i> ²
Step 1								.02	.00
Constant	52.34	3.79							
Assault frequency	-.93	.84	-.15	-1.10	.28	-.15	.02		
Step 2								.10	.04
Constant	74.15	14.04							
Assault frequency	-.09	.93	-.01	-.09	.93	-.15	.00		
Attachment avoidance	-1.00	.52	-.30	-1.93	.06	-.31	.07		
Attachment anxiety	-.05	.41	-.02	-.13	.90	-.06	.00		
Step 3								.14	.05
Constant	65.10	17.63							
Assault frequency	-.15	.94	-.02	-.15	.88	-.15	.00		

Variable	<i>b</i>	<i>Standard error of b</i>	β	<i>t</i>	<i>p</i>	Zero-order <i>r</i>	Squared semipartial (<i>sr</i> ²)	<i>R</i> ²	Adj <i>R</i> ²
Attachment avoidance	-1.15	.52	-.35	-2.19	.03	-.31	.09		
Attachment anxiety	.26	.52	.09	.51	.62	-.06	.00		
Age of deafness	.25	.37	.14	.66	.51	.14	.01		
Age of sign language	.21	.44	.12	.48	.63	.14	.00		
Step 4								.18	-.02
Constant	61.06	34.98							
Assault frequency	-.28	1.03	-.05	-.27	.79	-.15	.00		
Attachment avoidance	-1.15	.57	-.35	-2.01	.05	-.31	.08		
Attachment anxiety	.38	.55	.13	.69	.49	-.06	.01		
Age of deafness	-.02	.57	-.01	-.04	.97	.14	.00		
Age of sign language	.60	.58	.33	1.03	.31	.14	.02		
Hearing parents	-6.50	29.09	-.12	-.22	.82	-.10	.00		
HoH parent	5.66	27.92	.06	.20	.84	.09	.00		
Deaf parent	5.59	28.20	.09	.20	.84	.08	.00		

Variable	<i>b</i>	<i>Standard error of b</i>	β	<i>t</i>	<i>p</i>	Zero-order <i>r</i>	Squared semipartial (<i>sr</i> ²)	<i>R</i> ²	Adj <i>R</i> ²
School with sign support	-.43	10.26	-.01	-.04	.97	-.10	.00		
Deaf specialist school	5.48	9.53	.10	.58	.57	.06	.01		

Note. *b* = unstandardised regression coefficient. β = standardised regression coefficient. Regression coefficient *p* value from two-tailed (*df* = *N*-*k*-1; where *k* = number of predictors). Adjusted *R*² estimates variance in criterion that would be accounted for within target population sampled by this study. *Sr*² = indicates the unique variance predicted by the predictor variable.

Table 7.

Summary of Hierarchical Regression Analysis for Sexual Coercion, Insecure Adult Attachment Style, and Experiences of Language exposure Predicting Well-being.

Variable	<i>b</i>	<i>Standard error of b</i>	β	<i>t</i>	<i>p</i>	Zero-order <i>r</i>	Squared semipartial (<i>sr</i> ²)	<i>R</i> ²	Adj <i>R</i> ²
Step 1								.03	-.01
Constant	52.51	3.97							
Sexual coercion	-.01	1.96	.00	.00	1.00	-.13	.00		
Injury	-1.57	2.22	-.16	-.71	.48	-.16	.01		
Step 2								.10	-.03
Constant	74.58	14.22							
Sexual coercion	.95	2.00	.11	.48	.64	-.13	.00		
Injury	-.83	2.21	-.09	-.37	.71	-.16	.00		
Attachment avoidance	-1.07	.55	-.33	-1.94	.06	-.31	.07		
Attachment anxiety	-.03	.42	-.01	-.06	.95	-.06	.00		
Step 3								.16	-.05
Constant	65.61	17.69							

Variable	<i>b</i>	<i>Standard error of b</i>	β	<i>t</i>	<i>p</i>	Zero-order <i>r</i>	Squared semipartial (<i>sr</i> ²)	<i>R</i> ²	Adj <i>R</i> ²
Sexual coercion	1.84	2.07	.21	.89	.38	-.13	.01		
Injury	-2.03	2.38	-.21	-.85	.40	-.16	.01		
Attachment avoidance	-1.24	.56	-.38	-2.22	.03	-.31	.09		
Attachment anxiety	.30	.52	.10	.58	.57	-.06	.01		
Age of deafness	.37	.40	.21	.92	.37	.14	.02		
Age of sign language	.15	.44	.09	.34	.73	.14	.00		
Step 4								.21	-.01
Constant	56.72	35.12							
Assault frequency	2.28	2.21	.27	1.03	.31	-.13	.02		
Injury	-2.80	2.63	-.29	-1.07	.29	-.16	.02		
Attachment avoidance	-1.25	.60	-.38	-2.09	.04	-.31	.09		
Attachment anxiety	.45	.56	.15	.81	.43	-.06	.01		
Age of deafness	.15	.58	.08	.25	.80	.14	.00		
Age of sign language	.57	.58	.32	.98	.33	.14	.02		

Variable	<i>b</i>	<i>Standard error of b</i>	β	<i>t</i>	<i>p</i>	Zero-order <i>r</i>	Squared semipartial (<i>sr</i> ²)	<i>R</i> ²	Adj <i>R</i> ²
Hearing parents	-3.82	29.21	-.07	-.13	.90	-.10	.00		
HoH parent	8.29	28.09	.08	.30	.77	.09	.02		
Deaf parent	9.59	28.38	.15	.34	.74	.08	.02		
School with sign support	2.29	10.57	.04	.22	.83	-.10	.09		
Deaf specialist school	6.67	9.52	.12	.70	.49	.06	.01		

Note. *b* = unstandardised regression coefficient. β = standardised regression coefficient. Regression coefficient *p* value from two-tailed (*df* = *N*-*k*-1; where *k* = number of predictors). Adjusted *R*² estimates variance in criterion that would be accounted for within target population sampled by this study. *Sr*² = indicates the unique variance predicted by the predictor variable.

Table 8.

Summary of Hierarchical Regression Analysis for Psychological Aggression, Insecure Adult Attachment Style, and Experiences of Language Exposure Predicting Well-being.

Variable	<i>b</i>	<i>Standard error of b</i>	β	<i>t</i>	<i>p</i>	Zero-order <i>r</i>	Squared semipartial (<i>sr</i> ²)	<i>R</i> ²	Adj <i>R</i> ²
Step 1								.03	-.01
Constant	53.65	4.60							
Psychological aggression	-.69	1.51	-.11	-.46	.65	-.17	.00		
Injury	-.72	2.32	-.07	-.31	.76	-.16	.00		
Step 2								.10	-.02
Constant	74.31	14.37							
Psychological aggression	.04	1.57	.01	.03	.98	-.17	.00		
Injury	-.13	2.36	-.01	-.05	.96	-.16	.00		
Attachment avoidance	-1.01	.55	-.31	-1.84	.07	-.31	.07		
Attachment anxiety	-.06	.43	-.02	-.13	.90	-.06	.00		
Step 3								.14	.03
Constant	64.89	17.82							

Variable	<i>b</i>	<i>Standard error of b</i>	β	<i>t</i>	<i>p</i>	Zero-order <i>r</i>	Squared semipartial (<i>sr</i> ²)	<i>R</i> ²	Adj <i>R</i> ²
Psychological aggression	.24	1.58	.04	.15	.88	-.17	.00		
Injury	-.74	2.39	-.08	-.31	.76	-.16	.00		
Attachment avoidance	-1.13	.56	-.34	-2.02	.05	-.31	.08		
Attachment anxiety	.24	.53	.08	.46	.65	-.06	.00		
Age of deafness	.27	.39	.15	.69	.50	.14	.01		
Age of sign language	.21	.45	.11	.46	.65	.14	.00		
Step 4								.18	-.04
Constant	60.98	35.34							
Psychological aggression	.17	1.67	.03	.10	.92	-.17	.00		
Injury	-1.02	2.62	-.11	-.39	.70	-.16	.00		
Attachment avoidance	-1.11	.61	-.34	-1.84	.07	-.31	.07		
Attachment anxiety	.37	.56	.12	.65	.52	-.06	.01		
Age of deafness	.00	.57	.00	.00	1.00	.14	.00		
Age of sign language	.60	.60	.34	1.02	.32	.14	.02		

Variable	<i>b</i>	<i>Standard error of b</i>	β	<i>t</i>	<i>p</i>	Zero-order <i>r</i>	Squared semipartial (<i>sr</i> ²)	<i>R</i> ²	Adj <i>R</i> ²
Hearing parents	-7.20	29.42	-.13	-.25	.81	-.10	.00		
HoH parent	4.96	28.28	.05	.18	.86	.09	.00		
Deaf parent	5.63	28.51	.09	.20	.84	.08	.00		
School with sign support	.51	10.73	.01	.05	.96	-.10	.07		
Deaf specialist school	5.37	9.58	.09	.56	.58	.06	.01		

Note. *b* = unstandardised regression coefficient. β = standardised regression coefficient. Regression coefficient *p* value from two-tailed (*df* = *N*-*k*-1; where *k* = number of predictors). Adjusted *R*² estimates variance in criterion that would be accounted for within target population sampled by this study. *Sr*² = indicates the unique variance predicted by the predictor variable.

Table 9.

Cross Tabulation Showing Frequency of IPV Prevalence and Prelingual or Post-Lingual Deafness.

Age of deafness	IPV victimisation Prevalence							
	Physical assault		Psychological aggression		Sexual coercion		Injury	
	Yes	No	Yes	No	Yes	No	Yes	No
Prelingual (before the age of 6)	33	17	46	4	29	21	32	18
Post-lingual (aged 6 or older)	7	6	11	2	8	5	8	5
Total	40	23	57	6	37	26	40	23

Note. N = 63.

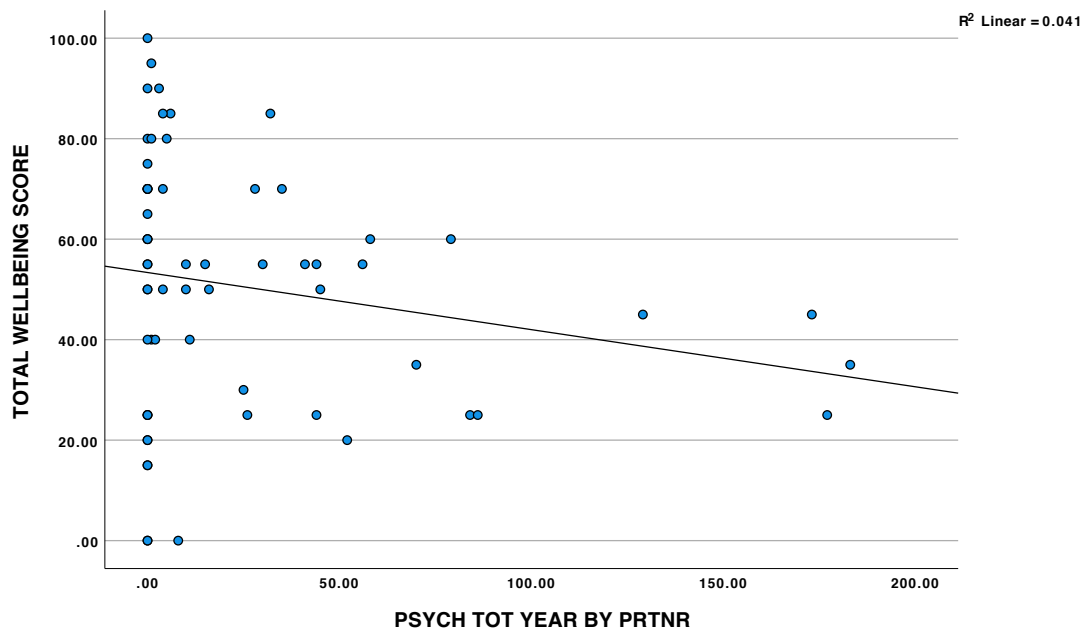
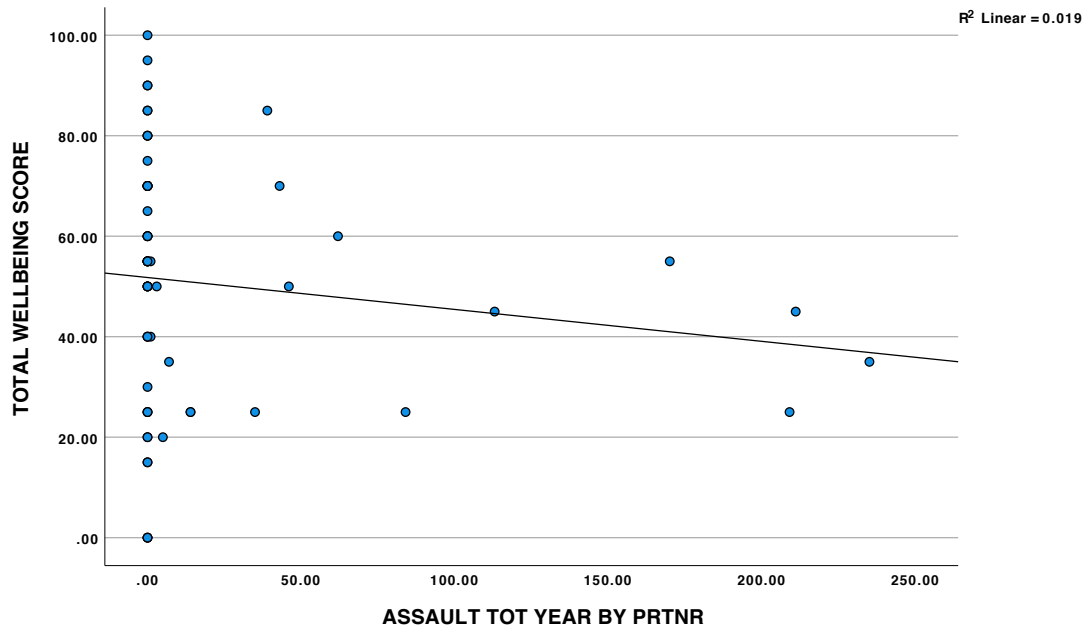
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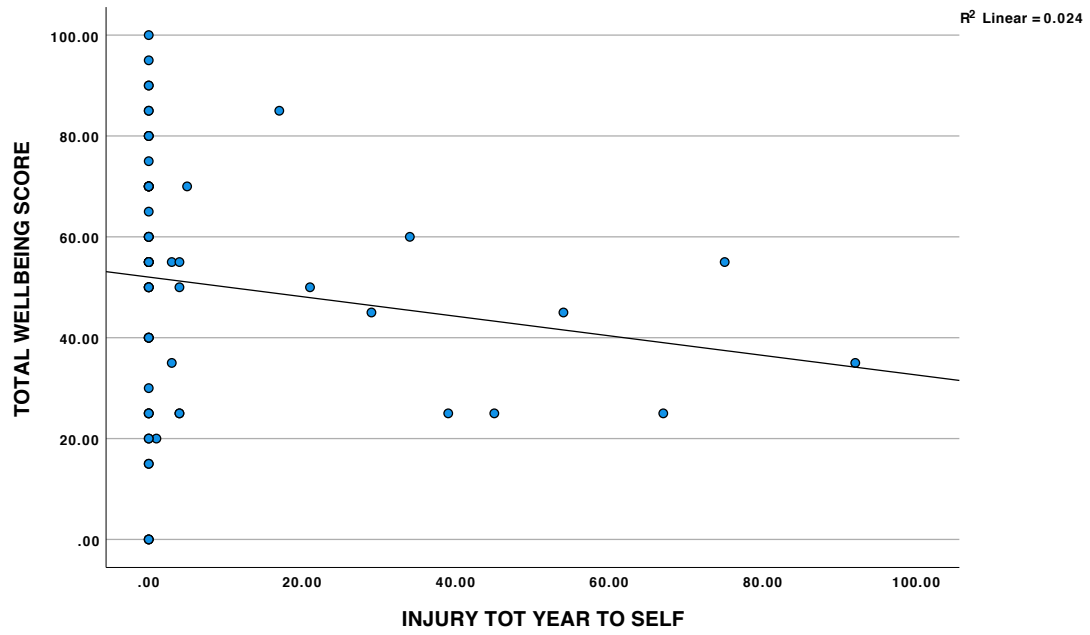
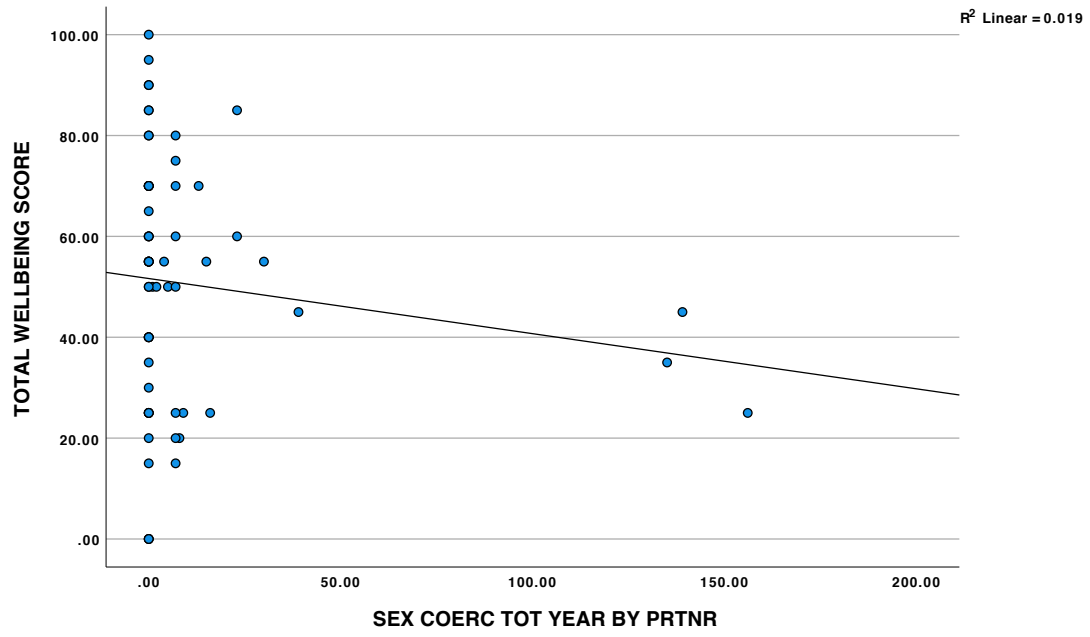
Cross Tabulation Showing Frequency of IPV Prevalence and Gender.

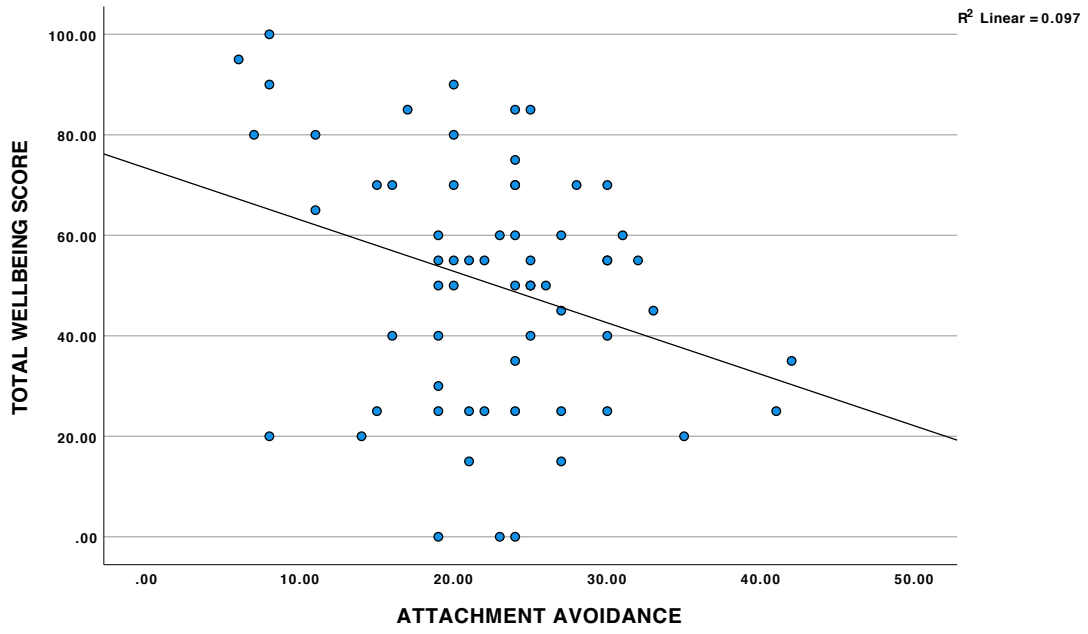
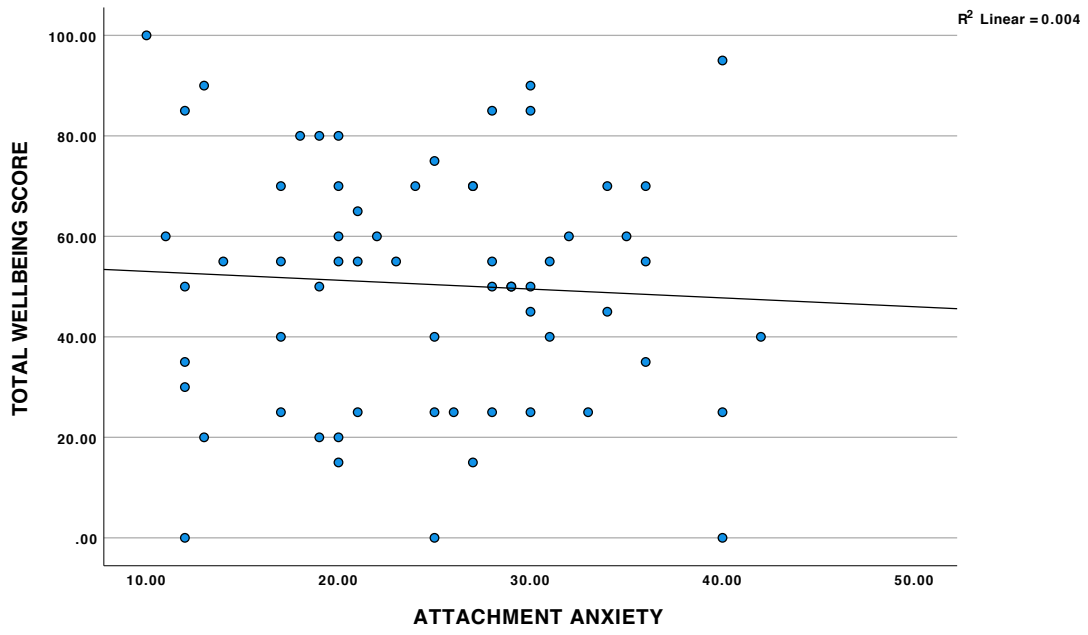
Gender	IPV victimisation Prevalence							
	Physical assault		Psychological aggression		Sexual coercion		Injury	
	Yes	No	Yes	No	Yes	No	Yes	No
Male	10	6	15	1	10	6	10	6
Female	30	16	42	4	27	19	30	16
Total	40	22	57	5	37	25	40	22

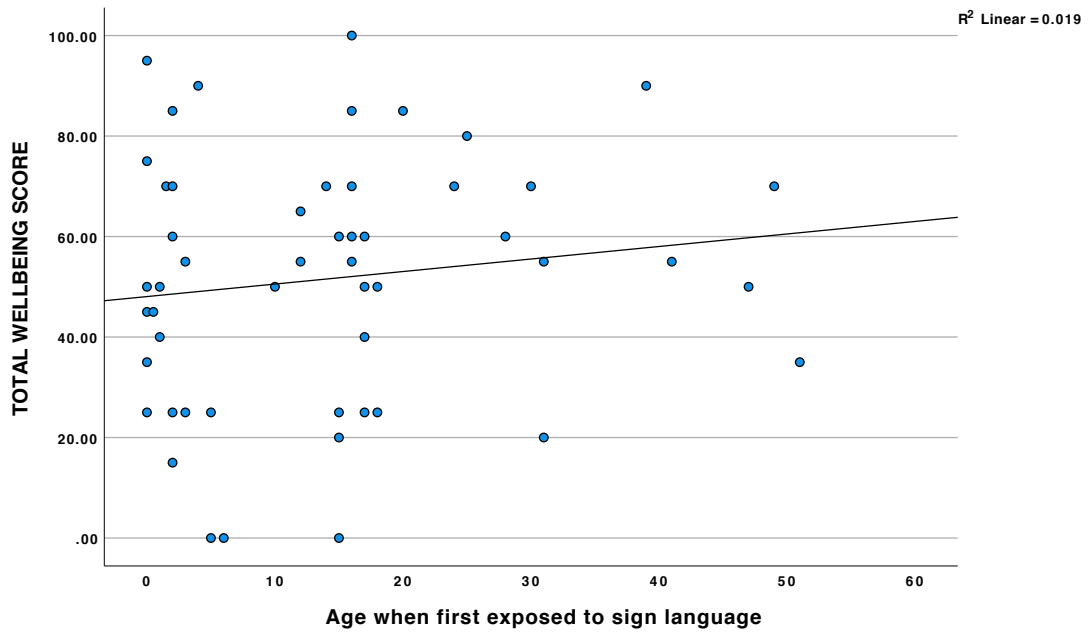
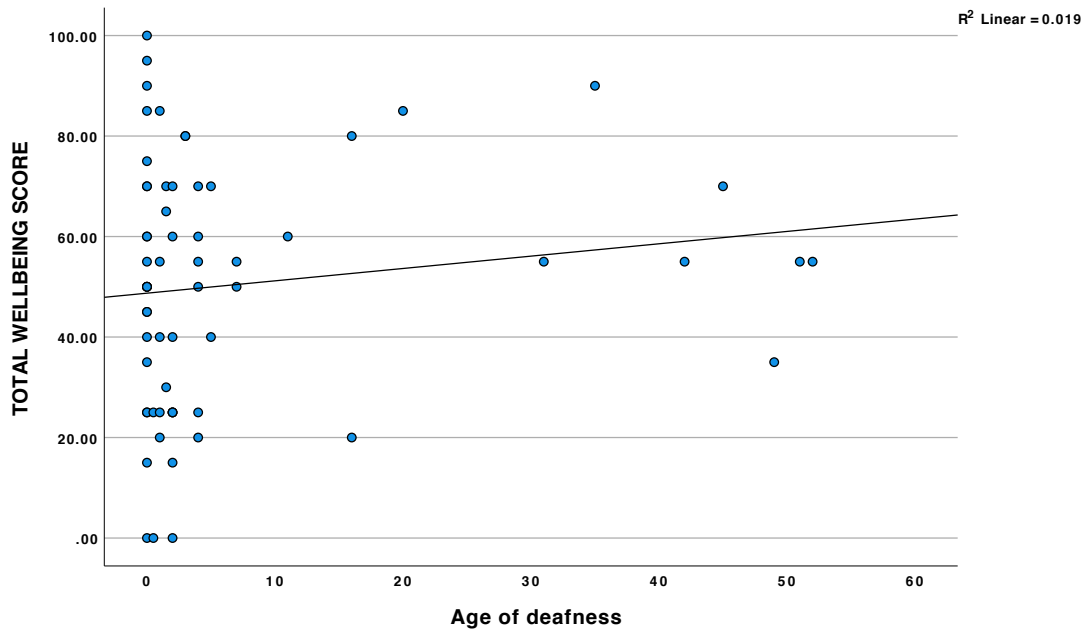
Note. N=62, one case was excluded as they did not disclose their gender identity.

Appendix A – Scatter plots for predictor variables against psychological well-being

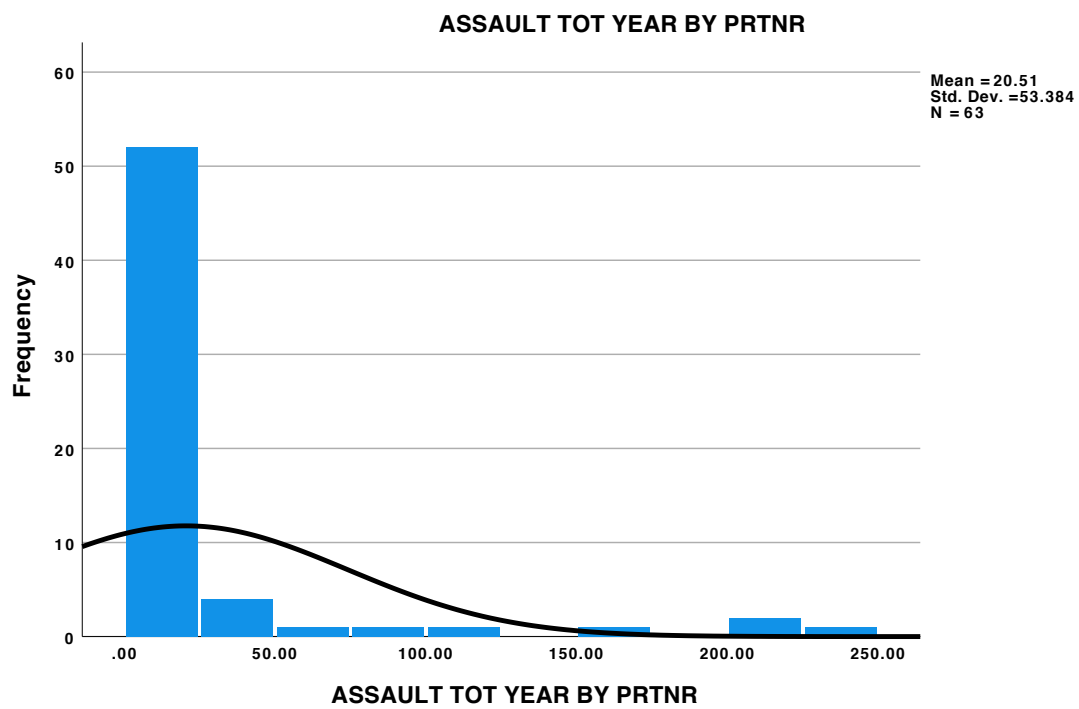
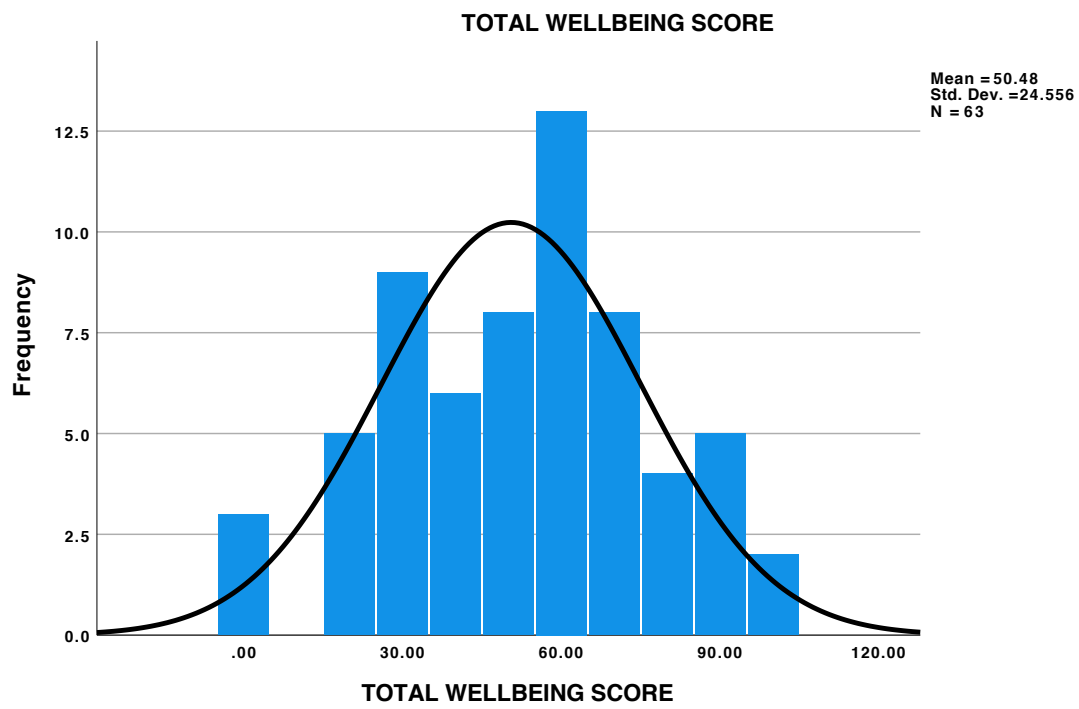


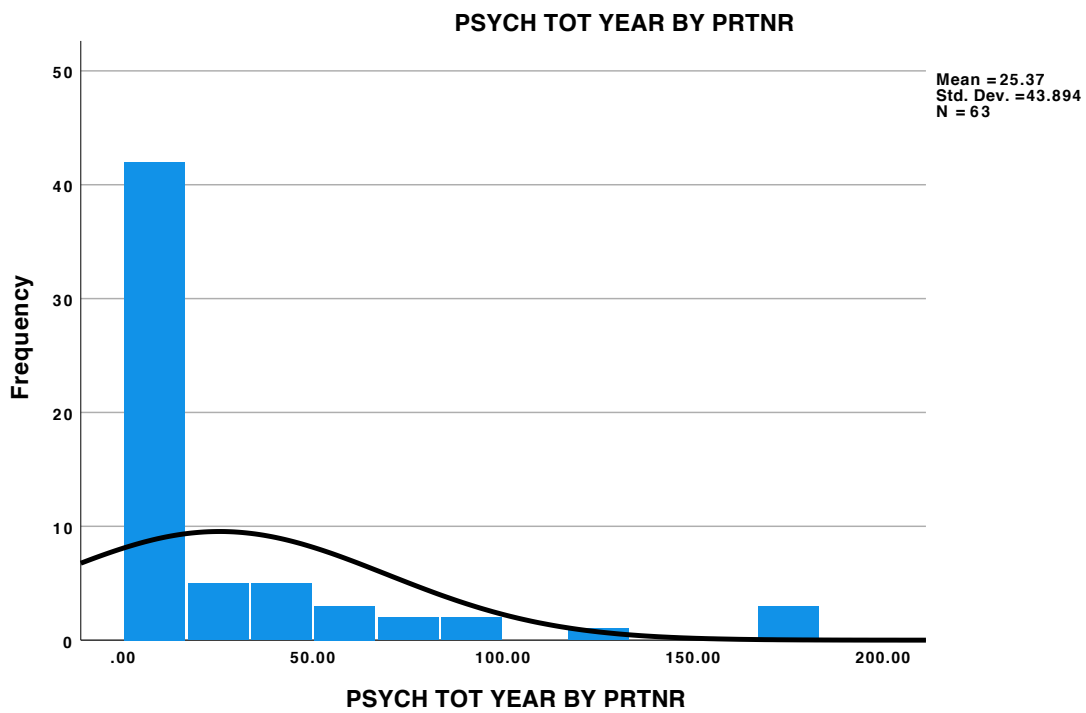
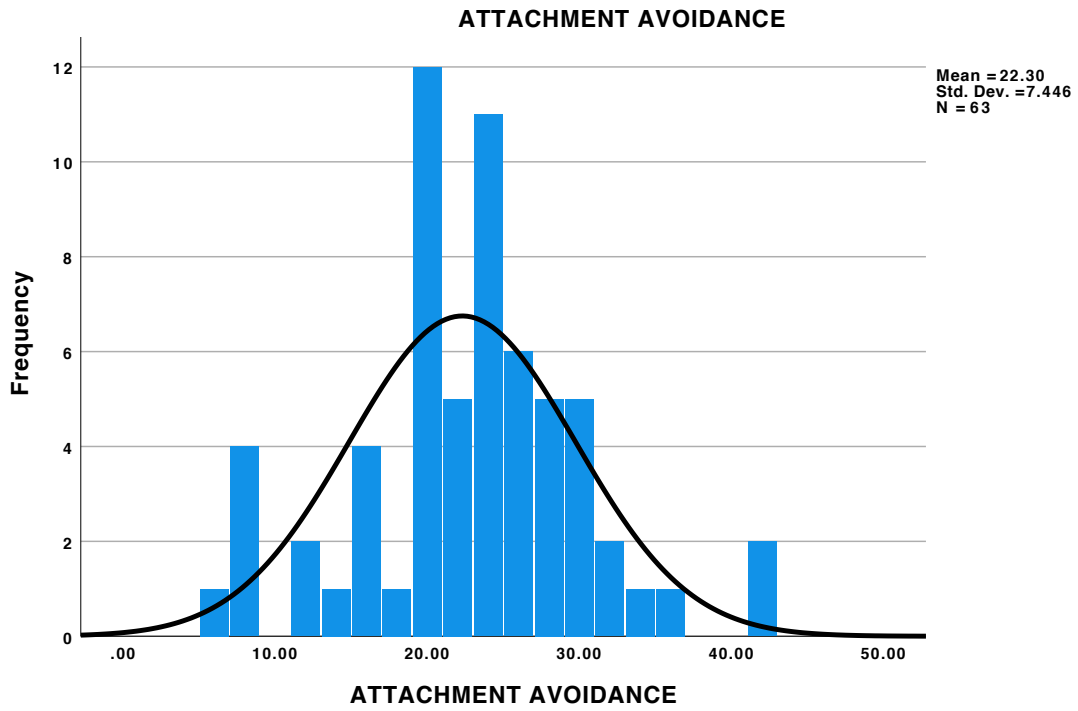


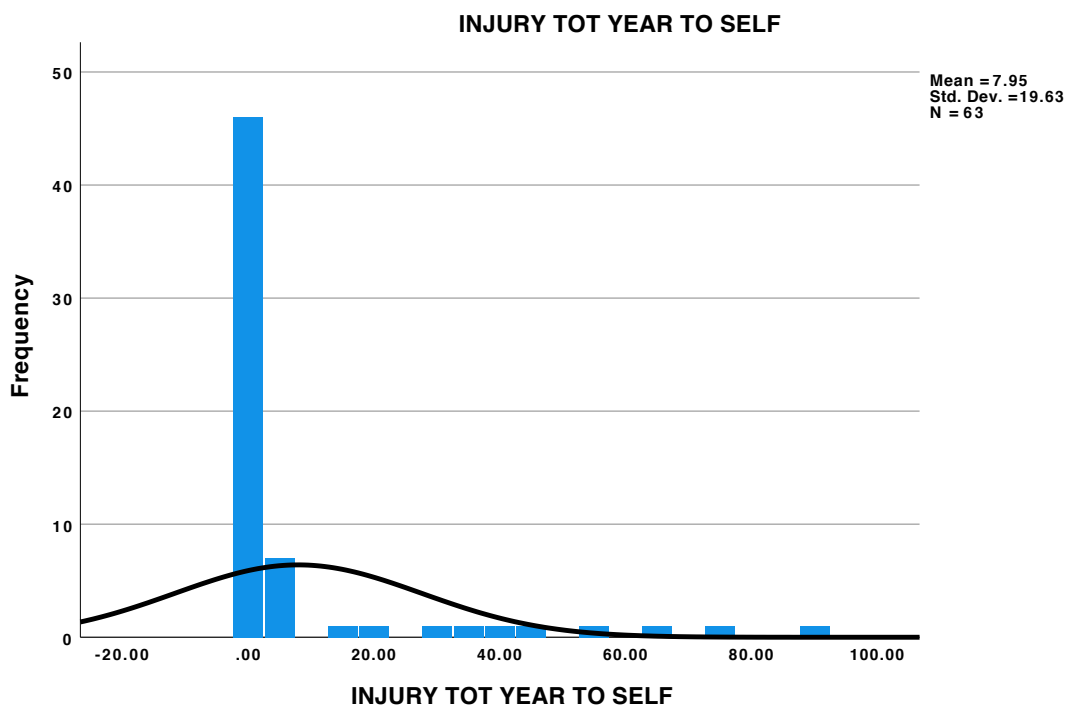
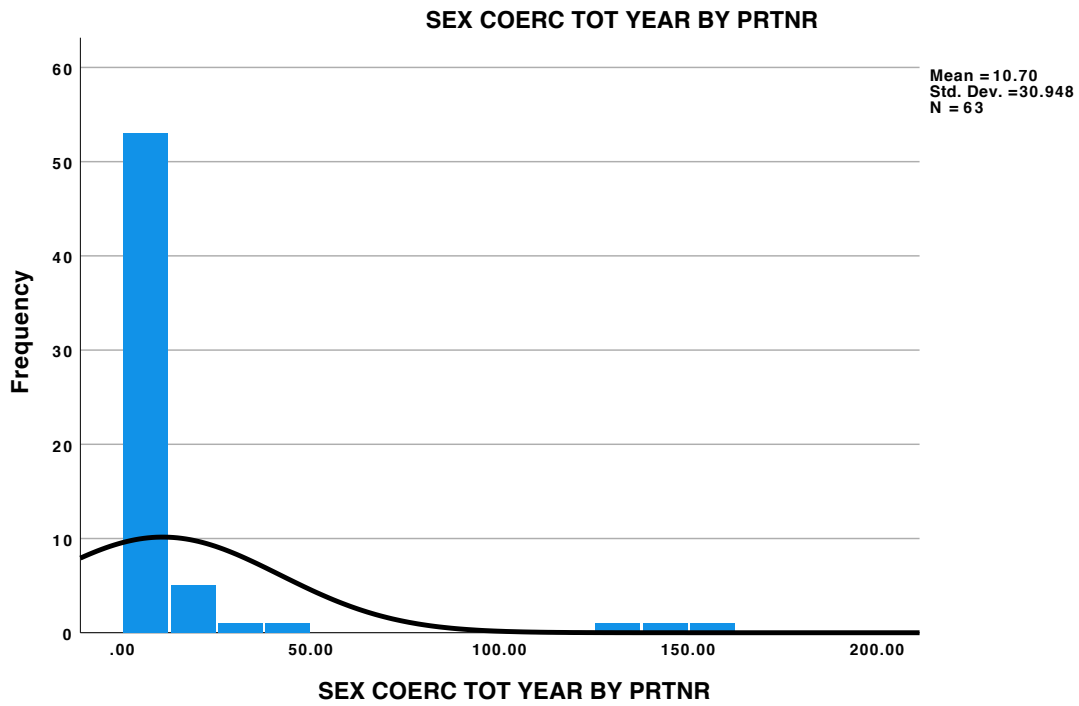


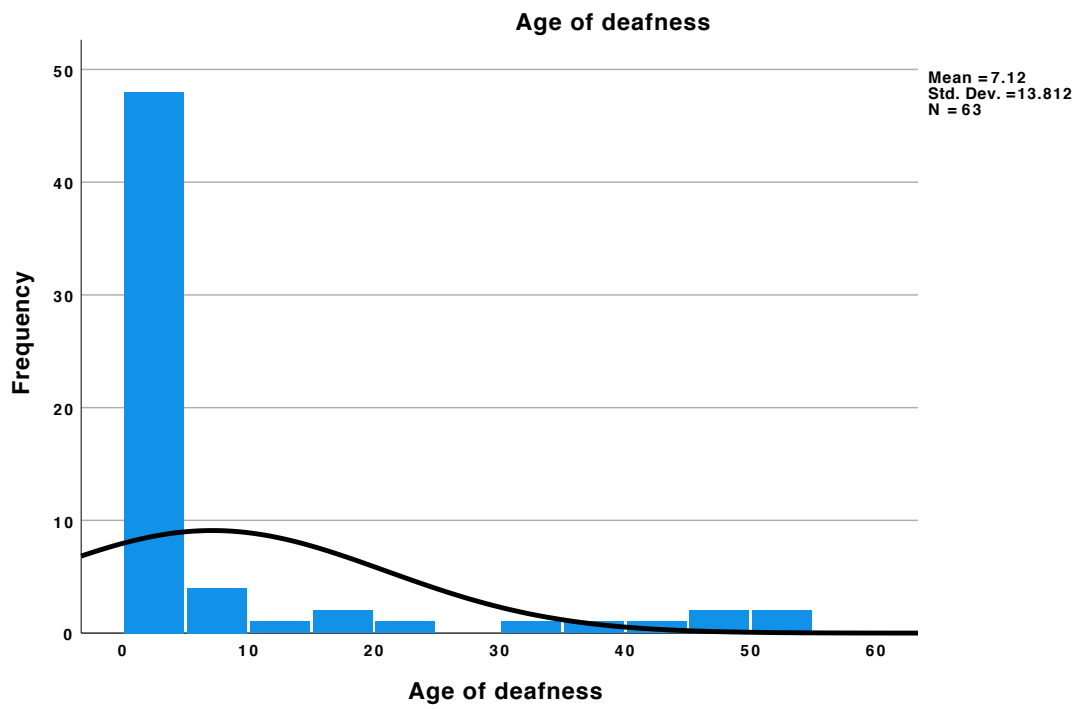
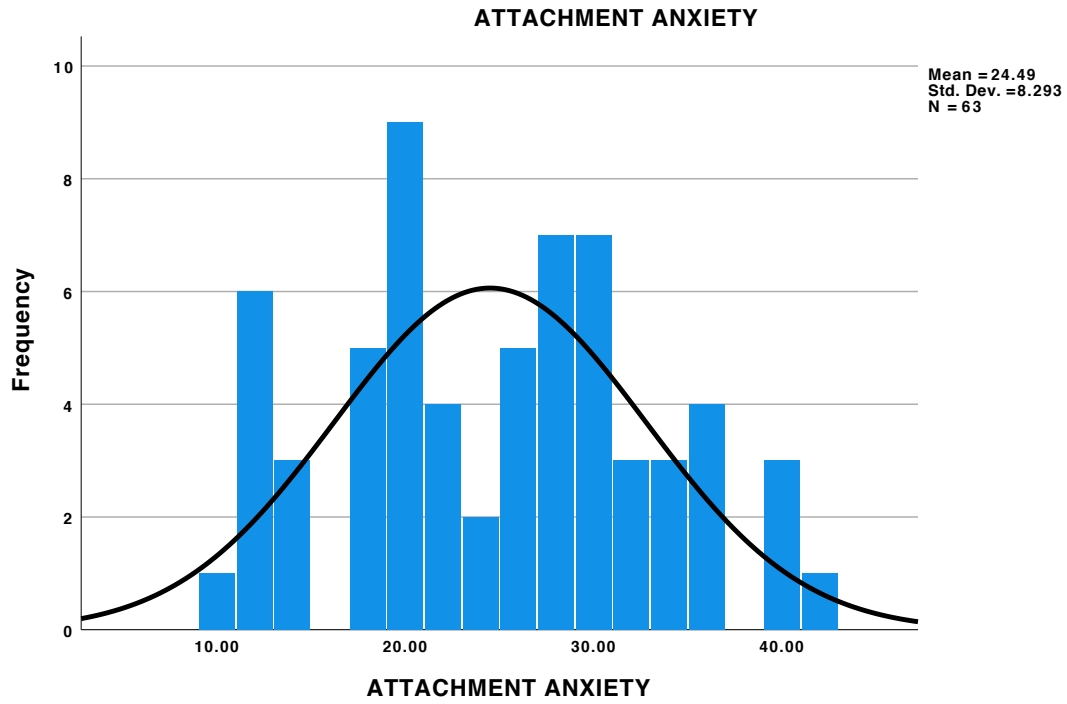


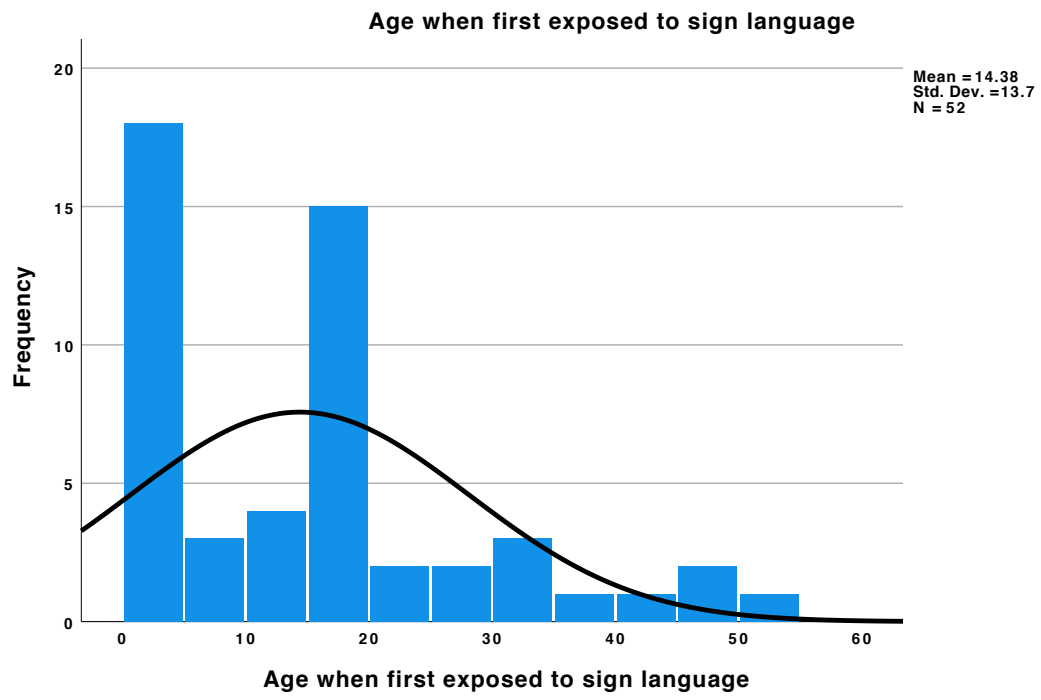
Appendix B- Frequency histograms



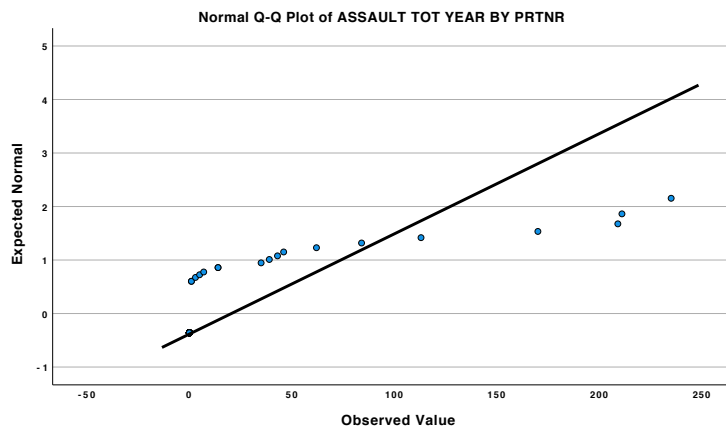
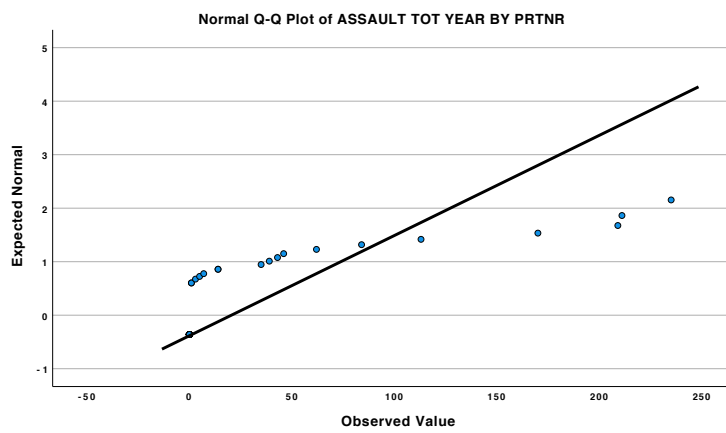
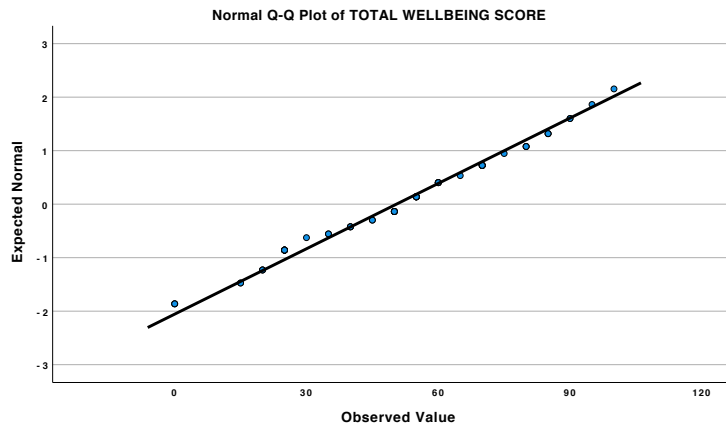


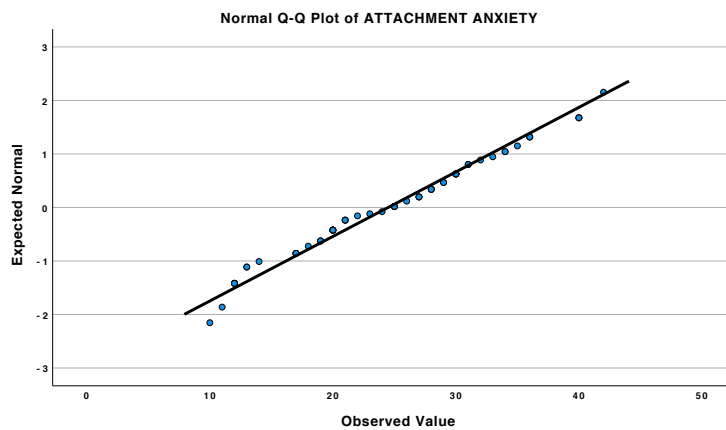
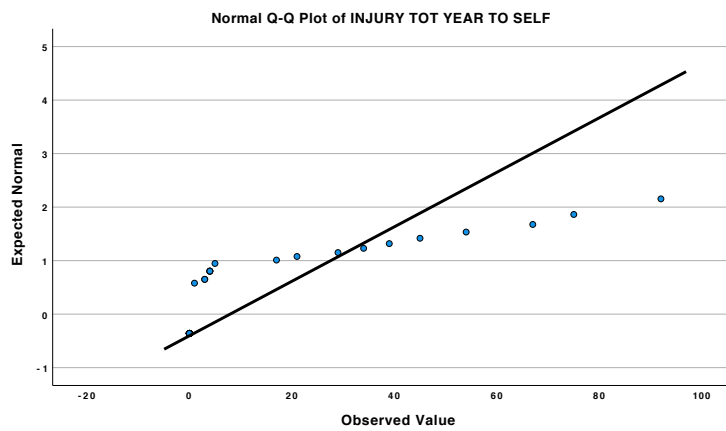
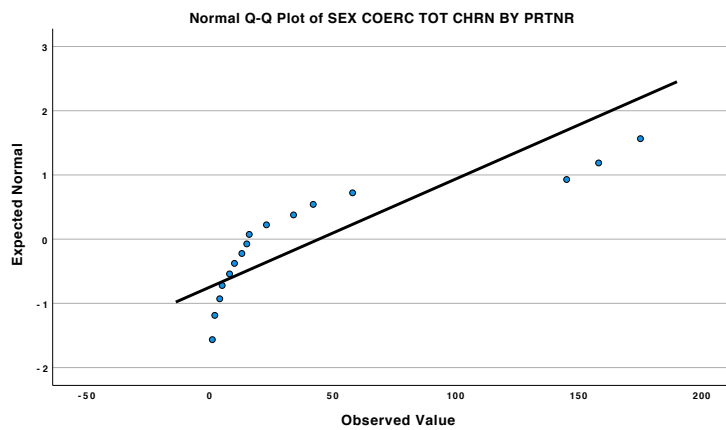
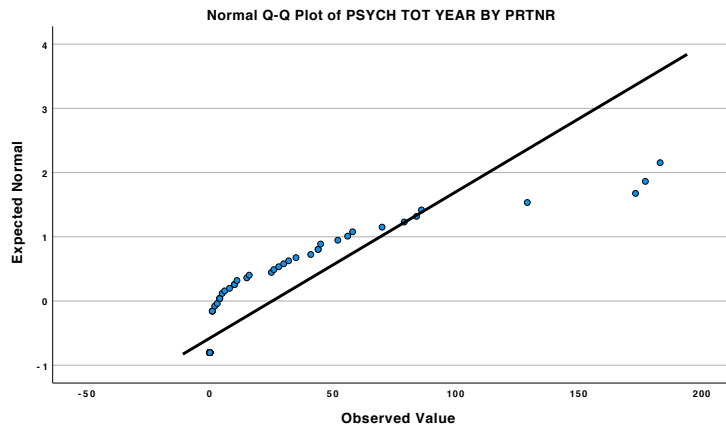


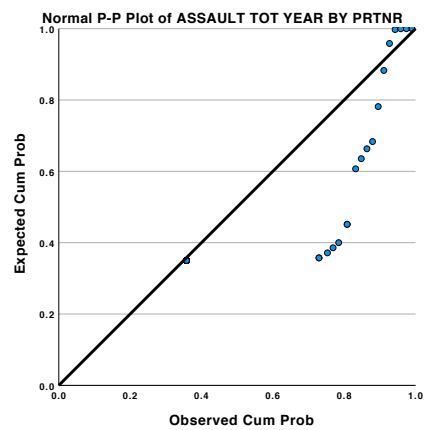
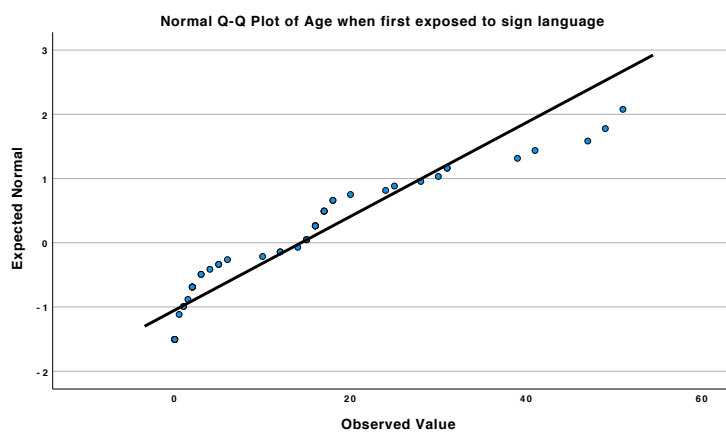
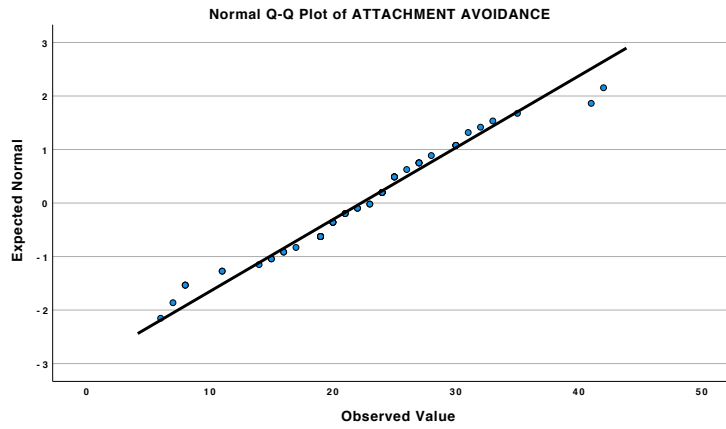


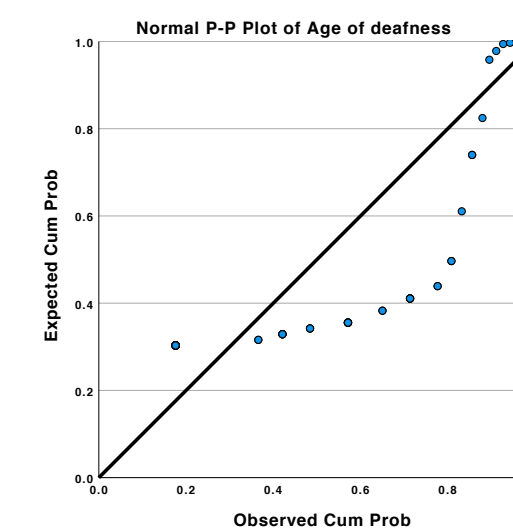
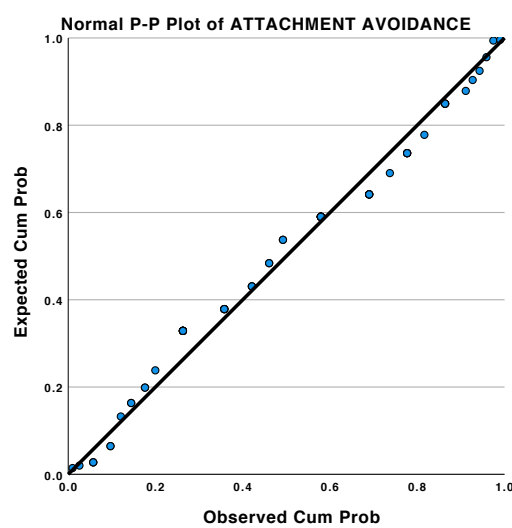
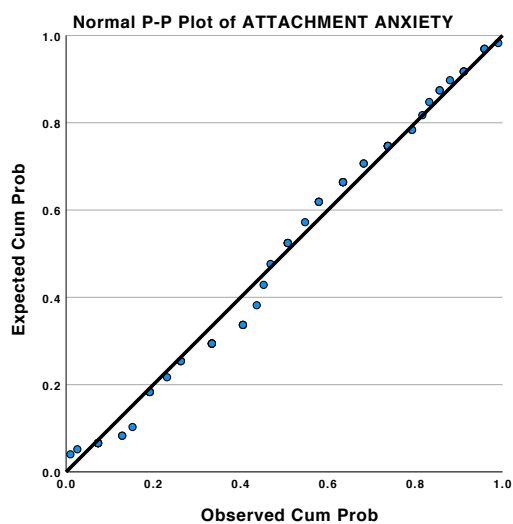
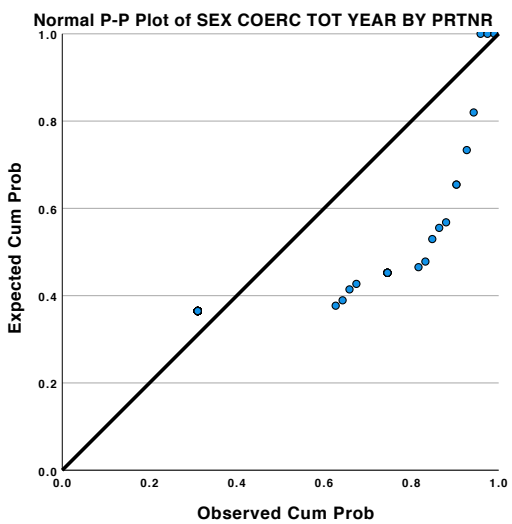
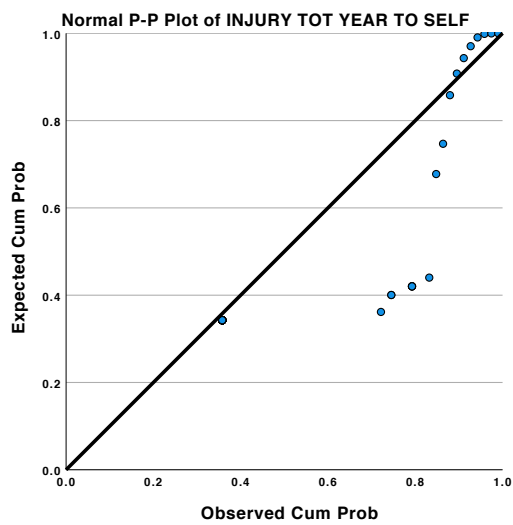
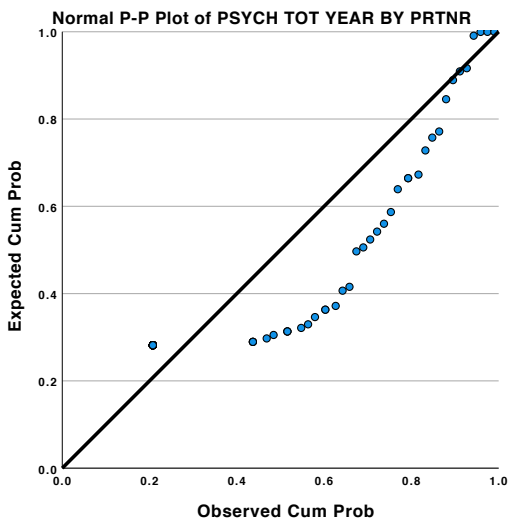


Appendix C- Normal Quantile-Quantile (Q-Q) plots and normal Probability-Probability (P-P) plots

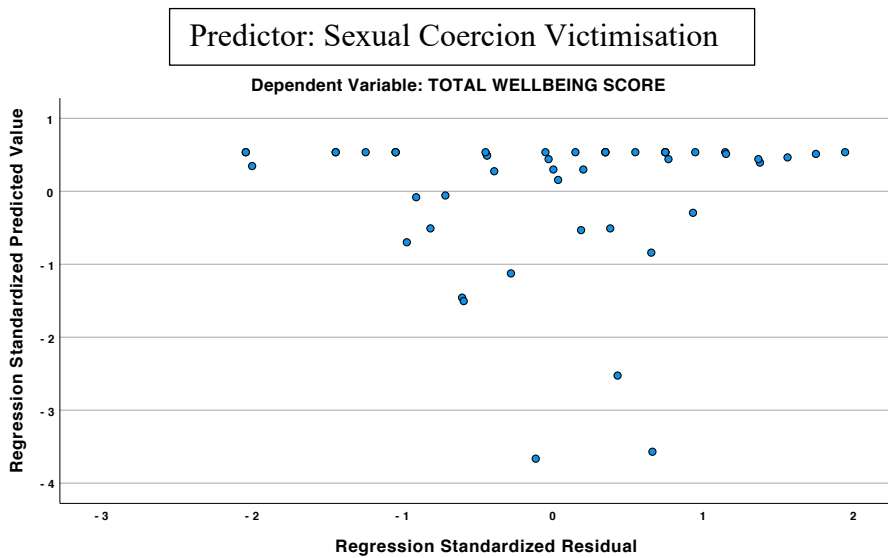
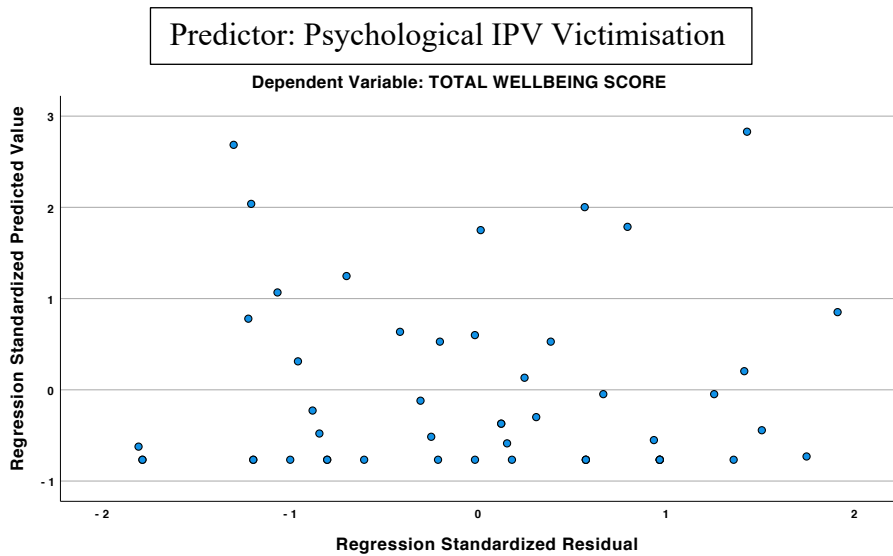
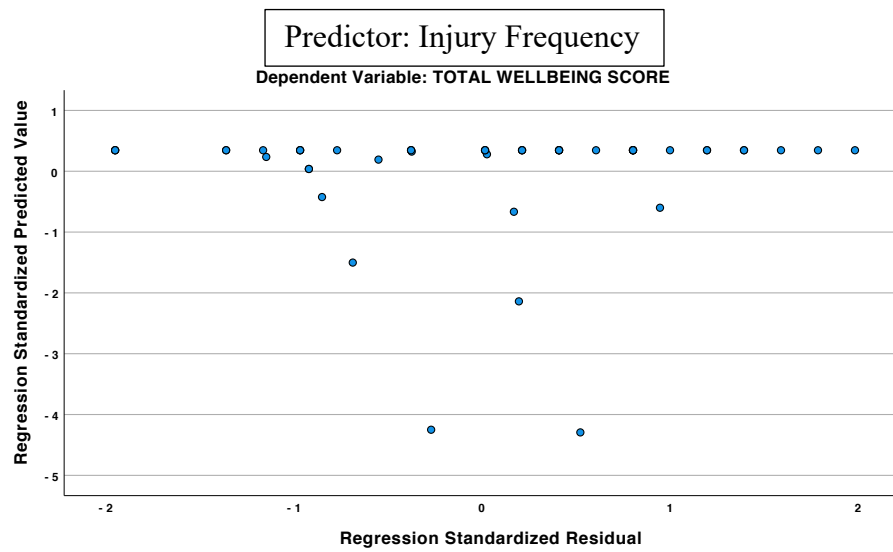


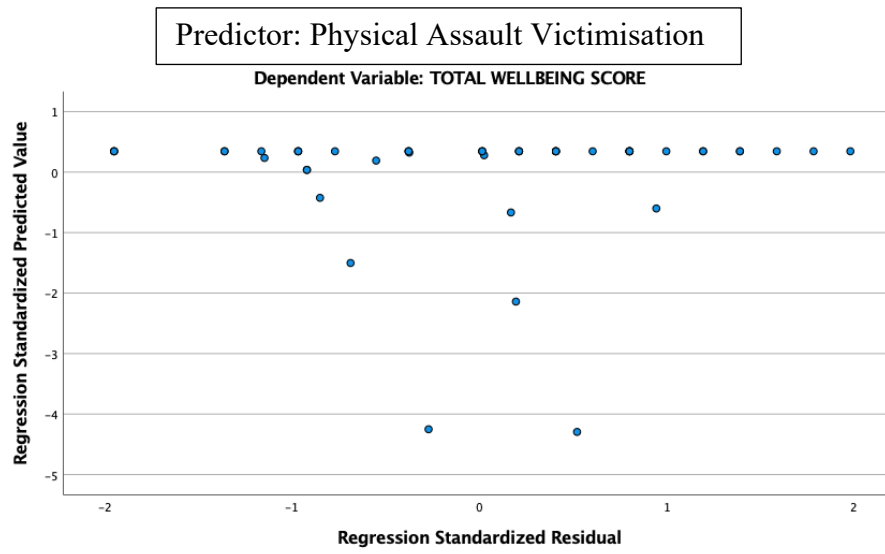






Appendix D -Standardised residual plots for CTS2 scales





Appendix E -Submission guidelines for the Journal of Interpersonal Violence**Aims and scope**

The Journal of Interpersonal Violence is devoted to the study and treatment of victims and perpetrators of interpersonal violence. It provides a forum of discussion of the concerns and activities of professionals and researchers working in domestic violence, child sexual abuse, rape and sexual assault, physical child abuse, and violent crime. With its dual focus on victims and victimizers, the journal will publish material that addresses the causes, effects, treatment, and prevention of all types of violence.

JIV only publishes reports on individual studies in which the scientific method is applied to the study of some aspect of interpersonal violence. Research may use qualitative or quantitative methods. JIV does not publish reviews of research, individual case studies, or the conceptual analysis of some aspect of interpersonal violence. Outcome data for program or intervention evaluations must include a comparison or control group.

Manuscript Preparation

Manuscripts should be prepared using the APA Style Guide, and should be **no longer than 30 double-spaced pages, including references, tables, and figures**. (Brief Notes should be no longer than 12 double-spaced pages, inclusive.) Text must be in 12-point Times New Roman font. Block quotes may be single-spaced. Manuscripts must include margins of 1 inch on all sides and pages must be numbered sequentially. All files should be in Word (.docx or .doc).

The manuscript should include five major sections (in this order): Title Page, Abstract, Main Body (anonymized, with all author names and identifying information removed for peer review), References, and Author Biographies.

Sections in a manuscript may include the following (in this order): (1) Title page, (2) Abstract, (3) Keywords, (4) Text, (5) Notes, (6) References, (7) Tables, (8) Figures, (9) Appendices, and (10) Author Biographies.

1. Title page must be uploaded as a separate file. Please include the following:

- Full article title
- Acknowledgments and credits
- Each author's complete name and institutional affiliation(s)
- Grant numbers and/or funding information
- Conflict of interests, if any
- Corresponding author (name, address, phone/fax, e-mail)

2. Abstract. Copy and paste the abstract (250 to 300 words) into the space provided, headed by the full article title. Omit author names. Abstract must clearly and concisely summarize the study questions, subjects, methods, findings, and major implications.

3. Keywords. 5-7 keywords must be included in the manuscript.

4. Text. Begin text headed by the full article title. Text must be anonymized, with all author names and other identifying information removed, for peer review.

a. Headings and subheadings. Subheadings should indicate the organization of the content of the manuscript. Generally, three heading levels are sufficient to organize text.

Level 1: centered, boldface, upper & lowercase

Level 2: flush left, boldface, upper & lowercase

Level 3: indented, boldface, lowercase paragraph heading ending with a period

Level 4: indented, boldface, italicized, lowercase paragraph heading ending with a period

Level 5: indented, italicized, lowercase paragraph heading ending with a period

b. Citations. For each text citation there must be a corresponding citation in the reference list and for each reference list citation there must be a corresponding text citation. Each corresponding citation must have identical spelling and year. Each text citation must include at least two pieces of information: author(s) and year of publication. Following are some examples of text citations:

(i) Unknown Author: To cite works that do not have an author, cite the source by its title in the signal phrase or use the first word or two in the parentheses. For example, “The findings are based on the study of students learning to format research papers” (“Using XXX,” 2001)

(ii) Authors with the Same Last Name: Use first initials with the last names to prevent confusion. For example, “L. Hughes, 2001; P. Hughes, 1998.”

(iii) Two or More Works by the Same Author in the Same Year: For two sources by the same author in the same year, use lowercase letters (a, b, c) with the year to order the entries in the reference list. The lower-case letters should follow the year in the in-text citation. For example, “Research by Freud (1981a) illustrated that...”

(iv) Personal Communication: For letters, e-mails, interviews, and other person-to-person communication, citation should include the communicator's name, the fact that it was personal communication, and the date of the communication. For example, E. Clark, personal communication, January 4, 2009. Do not include personal communication in the reference list.

(v) Unknown Author and Unknown Date: For citations with no author or date, use the title in the signal phrase or the first word or two of the title in the parentheses and use the abbreviation "n.d." (for "no date"). For example, “The study conducted by the students and research division discovered that students succeeded with tutoring” (Tutoring and APA, n.d.).

5. Notes. If explanatory notes are required for your manuscript, insert a number formatted in superscript following almost any punctuation mark. Footnote numbers should not follow dashes (—), and if they appear in a sentence in parentheses, the footnote number should be inserted within the parentheses. The footnotes should be added at the bottom of the page after the references. The word “Footnotes” should be centered at the top of the page.

6. References. Basic rules for the reference list:

- The reference list should be arranged in alphabetical order according to the authors’ last names.
- If there is more than one work by the same author, order them according to their publication date – oldest to newest (therefore a 2008 publication would appear before a 2009 publication).
- When listing multiple authors of a source use “&” instead of “and.”
- Capitalize only the first word of the title and of the subtitle, if there is one, and any proper names – i.e., only those words that are normally capitalized.
- Italicize the title of the book, the title of the journal/serial and the title of the web document.
- Manuscripts submitted to JIV should strictly follow the current APA style guide.
- Every citation in text must have the detailed reference in the Reference section.
- Every reference listed in the Reference section must be cited in text.

Do not use “et al.” in the Reference list at the end; names of all authors of a publication should be listed there.



Section Three: Critical Appraisal

William de Gaunza

Doctorate in Clinical Psychology

Division of Health Research

Lancaster University

All correspondence should be sent to:

William de Gaunza

Doctorate in Clinical Psychology

Lancaster University

Health Innovation One

Sir John Fisher Drive

Lancaster University

LA1 4AT

Email: w.degaunza@lancaster.ac.uk

This critical appraisal aims to expand on the literature review and empirical chapters by summarising the main findings, exploring the critical challenges in the research process, and suggesting a focus for future research.

Findings from the systematic literature review

The systematic review identified that there are a range of differences in the conceptualisation and presentation of schizophrenia spectrum disorder symptoms in the prelingually deaf population. Results indicated that the identification and conceptualisation of hallucinations and delusions are likely to be different and influenced by the unique hearing and communication experiences of prelingually deaf people. Indeed, some language abnormalities may present uniquely in sign languages, such as anomalous use of sign based on spatial factors and reverse finger spelling (Thacker, 1994). The research in this area is limited and suffers from a high number of single case studies, which do not adequately justify their methodology. Research in this area is likely to be difficult with a small number of researchers who have relevant knowledge of Deaf cultural issues and awareness of the impact of language dysfluency.

Findings from the empirical chapter

The empirical study found that experiences of intimate partner violence (IPV), attachment style, and experiences of language access in early life did not significantly predict psychological well-being in deaf participants. Findings also indicated that, of the predictors, only higher attachment avoidance was a statistically significant predictor of lower psychological wellbeing when included in a model with IPV victimisation. This study found much higher levels of IPV victimisation than are reported in hearing populations. There were no significant differences between prelingually or post-lingually deaf groups, or between male and female participants. However, the study has several methodological and conceptual issues which should be considered.

Synthesising results in deaf mental health research

Deafness and mental health is an understudied area of research. It may be more difficult to adequately recruit for studies due to the difficulty in accessing deaf clinical samples. Sample sizes are small and ethical issues need a careful appraisal. This was reflected in the results of the systematic review chapter, where there was a large number of case study designs (Anglemyer & Crespi, 2018; Briffa, 1999; Critchley et al., 1981; Matsumoto et al., 2022; Morris et al., 2020; Pedersen & Ernst Nielsen, 2013; Saha et al., 2017; Schonauer et al., 1998; Thylur et al., 2020; Weiler et al., 2013). There is an inherent difficulty in synthesising a literature base that has a diverse mix of case studies, as their methodology makes it difficult to generalise the results. From a methodological point of view, I could have limited the scope to a quantitative review, however, the review question did not suit a meta-analysis and therefore a narrative synthesis would still have been appropriate. Because of this, a mixed methods review was identified as the most appropriate way to comprehensively synthesise the results. A key difficulty with mixed methods reviews is systematically appraising and synthesising a range of research methodologies (Atkins et al., 2012; Lizarondo et al., 2022; Pearson et al., 2015). I chose the Quality Assessment with Diverse Studies (QuADS) appraisal tool (Harrison et al., 2021) as a way of appraising studies with diverse methodology. I followed the PRISMA statement to introduce as much rigour as possible in the searching, selecting, and appraising of the research. However, one difficulty was systematically synthesising information in a narrative review. I followed guidance from Popay et al. (2006) in order to explore relationships in the data through textual descriptions and tabulation. I combined this with QuADS scores to present the findings in a systematic and comprehensive manner. However, the results are still potentially subject to researcher bias. One potential difference I could have made in this part of the research process would be to use a content analysis to support and test the relationships between the results. This

method has utility in both quantitatively measuring concepts, phrases, or words reported across data and in abstracting themes in a more interpretive manner (Graneheim et al., 2017). One barrier to this, however, was the scope of this review as a DClinPsy project. Ultimately there was not enough resource to effectively complete this as a confirmatory process. But in future I would consider building this into the review process for reviews across a range of methodologies.

Challenges in measuring concepts within deafness research

One prominent difficulty I encountered in the empirical chapter is that an administrative error led to the main outcome variable being presented as a five-point Likert scale rather than a six-point Likert scale. It should be considered that this could impact the validity of the scale interpretations. It's acknowledged in the literature that there is disagreement about how concept of validity is defined (Newton & Shaw, 2013). In the context of psychological research, the concept of validity has two camps: the first conceptualises validity as the interpretation of test scores within a sample, and the second understands validity as the property of the test itself (Jebb et al., 2021). Adopting the view that validity of a measure is intrinsically based within the application of the measure to a sample, it is considered that although the scale was not presented as the authors intended, the measure can still display content validity in the context of the current sample. The current study found the mean scores of the WHO-5 to be similar to those contained in a review of the WHO-5 (Topp et al., 2015). This would suggest a level of criterion validity for the WHO-5 in the current sample; however, the reduction of scale points could have skewed the reported means in the present study. It's therefore difficult to statistically compare means of the WHO-5 from the current study with others.

This may be less problematic in the context of the WHO-5 as an outcome measure in the regression analysis. A core aspect of understanding validity in developing Likert scales is

the conceptualisation of construct continua (Jebb et al., 2021). A key consideration here is whether a scale measures a unipolar, bipolar, or combinatorial construct (Tay & Jebb, 2018). The WHO-5 is a measure of psychological wellbeing, however as a concept, it is also considered a possible screening measure for feelings of depression (Henkel et al., 2004). This might suggest that the concept of well-being (as measured by the WHO-5) is not a unipolar construct. A dual continua model of well-being has also been supported by dedicated research (Mason Stephens et al., 2023). An important aspect of construct continua in bipolar Likert measures is the definition of upper and lower poles, as well as the graduation between them (Tay & Jebb, 2018). In the context of the current study, although the highest scale point was omitted, the lower pole was clearly defined and the graduations between points (representing frequency) were kept consistent. This means that although the range is not as wide as the measure intended, the construct continua is still likely valid in the sample. and scores can still be interpreted in the correlational and regression analyses with a level of confidence.

Measuring IPV

IPV is an issue that transcends borders, geography, and cultures. The terminology that describes the range of behaviours considered domestic abuse changes between countries and has changed throughout time (Brooks-Hay et al., 2018). Early research in this area referred to 'wife abuse', 'wife battery', and 'wife assault' (Browning & Dutton, 1986; Dobash & Dobash, 1979; Ford, 1983). Whereas the contemporary UK legal definition encompasses physical, verbal, sexual, psychological, and economic abuse, as well as behaviour which could be coercive or controlling ("Domestic Abuse Act," 2021). With such a broad scope, it can be difficult to conceptualise and explore IPV using quantitative means (McGarry & Ali, 2016). One such issue is whether it should be measured as the frequency, the chronicity, or the severity of IPV behaviours (Schwartz, 2000).

The aim of the empirical chapter was to understand whether experiences of IPV predicted well-being in deaf populations, and whether this relationship was influenced by adult attachment style and early language experiences. The nature of the research question relied on the measurement of IPV as a quantitative variable, describing a range of discrete experiences and quantifying them in terms of their frequency. However, given the breadth of domestic abuse conceptualisation, it is possible that any attempt to objectively measure IPV in this way may not fully capture the experiences of victimisation. For example, the construct of coercive control is often inconsistently defined and measured by psychometric tools (Hamberger et al., 2017). Some IPV researchers argue that all violent acts are inherently coercive and controlling, and focussing on the frequency of these behaviours in domestic relationships provides a better measure of prevalence (Walby & Towers, 2017). However, other researchers consider that this limits the measurement of IPV, particularly when it might happen outside of the context of explicit physical violence (Donovan & Barnes, 2021; Myhill & Kelly, 2021).

The empirical study made use of the revised conflict tactics scales (CTS2) (Straus et al., 1996), which has subscales of psychological aggression, physical assault, sexual coercion, and injury. Some aspects of these subscales are likely to represent factors of coercive control, and CTS2 items have been found to be correlated with measures of coercive control (Robertson & Murachver, 2011). However, the use of any quantitative measure may not fully encompass experiences of IPV. Particularly when considering participants from different geographical and cultural contexts, where the conceptualisations are likely to be impacted by legal and sociocultural differences. Consideration should then be given to the methodology and scope of the empirical chapter of this thesis. The opportunities to increase the potential validity of results from the data could have been achieved by increasing the homogeneity of the sample. This could have been achieved by focussing solely on participants from the UK,

for example, and selecting a measure based on the UK's legal definition. However, this would have drastically reduced the response rate and it would be less likely that a sufficient sample size could have been drawn, which is especially problematic when using online surveys (Fielding et al., 2017).

The CTS2 is possibly the most widely used measure of IPV, and has generally been found to produce reliable test scores and valid test scores interpretations across different populations and cultures (Chapman & Gillespie, 2019). It is also the predominant measure used for IPV research (Capaldi et al., 2012). However, the use of the CTS2 is not without problems. The underlying assumption of the CTS2 is that instances IPV are the result of conflict management between two people in an intimate relationship. This could be considered problematic for conceptualisations that understand IPV as an attempt to deliberately control or harm one's partner, using violence in an instrumental context rather than expressively in the face of interpersonal conflict (DeKeseredy & Schwartz, 1998; Kimmel, 2002). I had an opportunity to use a range of other measures of IPV, which have been developed to include the context of abusive behaviours: The Composite Abuse Scale (Hegarty et al., 1999), Abusive Behaviour Inventory (Shepard & Campbell, 1992), or the Index of Spousal Abuse (Hudson & McIntosh, 1981).

From the perspective of research design, the CTS2 represents the only quantitative measure of IPV that has been assessed for validity and reliability in a deaf population (Anderson & Leigh, 2010). Notably, the systematic literature review chapter of this thesis also identified a lack of studies exploring validity and reliability of measures for assessing schizophrenia spectrum disorders in deaf samples. This evidences that there is likely to be a lack of research around validating measures within deaf populations across several areas of healthcare research. The use of the CTS2, and the inherent difficulty with its conceptualisation of IPV, is an aspect that I reflected on with the help of perspectives from a

domestic abuse charity. They helped me to understand how the wording of the introductory paragraph might be perceived as invalidating by people who have experienced instrumental IPV. For example “no matter how well a couple gets along there are times when they disagree, get annoyed with the other person . . . or just have spats or fights because they are in a bad mood, are tired, or for some other reason” (Straus et al., 1996, p. 310). This is particularly important considering that the deaf population are more likely to have experienced a range of traumatic abuse throughout childhood (Knutson et al., 2004; Kvam, 2004). And there may be a particular risk of minimising or invalidating the experiences of abuse in this population. Ultimately, a statement was added at the beginning of the measure to highlight that the language may not reflect contemporary understandings of IPV perpetration. Although this does not fully address the conceptual shortcomings that are inherent within the CTS2, it is likely to have supported respondents to complete the survey by acknowledging and addressing language which may otherwise minimise the coercive context of IPV.

Theoretical perspectives of IPV and my identity as a researcher

Some authors argue that the coercive context of IPV is intrinsically linked to the gender differences in perpetration and victimisation, with women overwhelmingly being the victims instrumental abuse (Johnson, 2008; Stark, 2010). The National Crime Survey for England and Wales (ONS, 2022) indicates that prevalence of all forms of domestic abuse victimisation is greater for women, with 1,700,000 women experiencing domestic abuse compared to 699,000 men; perpetrators tend to be men. Power imbalances between genders exist across interpersonal, institutional, and structural levels of society and are thought to underpin the gendered nature of IPV victimisation and perpetration (Corbett, 1991; Russo & Pirlott, 2006). Traditional quantitative methods of social research were criticised in the 1970's and 80's by researchers from a feminist perspective as maintaining hierarchical power (Tolman & Szalacha, 1999). The reduction of this power imbalance has been a focus of

feminist research methodology in IPV through promoting open, reflexive dialogue which prioritises the words and experiences of participants (Westmarland & Bows, 2018). This focus points towards using a qualitative methodology.

This study made use of a quantitative approach for several reasons. Fundamentally, the research question lent itself to an observational design. It's also considered that confidentiality of participants should be paramount in IPV research (WHO, 2001). The level of confidentiality afforded to the participants by the anonymous online survey in the current study may have increased their ability to respond. The online survey also provided participants with control over their participation in the study. The use of sign language translation of the participant information was also able to be embedded as a video in the survey to minimise potential harm. These considerations in the research design address some of the key ethical considerations in IPV research (Clark & Walker, 2011) and offers justification for the use of quantitative methodology.

There are, however, likely to be implicit biases within the methodology which influence the research power dynamic. Fontes (2004) describes how researchers often study down the power hierarchy, typically studying those who are either from lower socioeconomic backgrounds, more subjugated, more oppressed, or have had less education. Whilst many of these aspects are not known about individual participants, it is likely that many deaf people (particularly those who have also experienced IPV), hold less power than me as a white cis male researcher who has single sided deafness. This power dynamic may be reflected in aspects of the research design. One such area is the gender of the Deaf BSL interpreter who recorded a BSL translation of the survey's text. I recruited a culturally Deaf interpreter to support culturally appropriate translation of the survey material. Whilst the gender of the interpreter was not known at the point of commissioning the work, the interpreter was male. The inclusion of a male interpreter, as well as any implicit biases in the methodology due to

the male research team, may have impacted the participants' ability to respond to the questions. There was a significant drop out rate with 77% of those who started the survey not completing it. Although this is expected in online survey data collection (Fielding et al., 2017), it should also be considered that this dropout rate could be indicative of IPV victims not feeling empowered to complete or report their experiences, particularly if they experienced male perpetration of IPV.

However, the limited research in deaf populations suggests that gender differences in IPV prevalence may present differently than in hearing populations. Pollard et al. (2014) found higher rates of male IPV victimisation across three national samples of deaf participants than in general populations (cf Tjaden, 2000). This might suggest that other intersectional aspects relating to deafness relate to the power imbalances which increase likelihood of IPV victimisation. However, there is limited accessible research around IPV prevalence in deaf populations with many studies remaining unpublished and difficult to access (Anderson et al., 2011).

Recruitment and sample size

Sampling and sample size are difficulties which were encountered in the empirical study. There were no significant differences between male and female prevalence of IPV victimisation. However, considerably more female participants completed the survey than males. Men may face a range of barriers in responding to questions of IPV and reporting abuse to professionals. These include difficulty accepting their status as a victim, gender stereotypes, fear of ridicule, and fear of losing their children or being portrayed as perpetrators (Hine et al., 2020). There is a high probability that these barriers prevented men from responding to the survey, meaning their experiences could be underrepresented. It is also possible that the lower response rate for men in the present study simply reflects that deaf men experience less IPV victimisation. However, this would be in contrast to the

findings of Pollard et al. (2014) who reported much larger sample sizes. There is also evidence that women respond disproportionately to online surveys (Smith, 2008), suggesting that the research design may have also impacted response rates between genders. There are also other methodological factors that may have influenced the response rate of participants.

The study did not exclusively recruit participants with experience of IPV victimisation as responses from participants not reporting IPV would still benefit the regression model. However, recruitment for the study took place using social media adverts using convenience sampling, which is likely to increase sample bias and non-response bias (Hooley et al., 2012). Ethically, it was important to highlight the subject matter of the survey to potential respondents via the study advertisements on social media to prevent harm and avoid unnecessary deception, which is in line with professional ethics standards (British Psychological Society, 2021). This meant that the study was often promoted as 'deafness and domestic abuse'. This had the potential to increase the non-response bias as potential respondents may have seen the study as only for those who have experienced abuse, reducing the response rate of those who do not identify as victims of IPV. Furthermore, this had potential to reduce responses from those who have experienced IPV but may not identify as such. As discussed above, men have a range of barriers in reporting IPV, one of these barriers is a lack of recognition of male victimisation (Wallace et al., 2019). However, this is further complicated in deaf populations where early language experiences likely lead to difficulties in recognising behaviours as IPV (Mastrocinque et al., 2017). Anderson and Kobek Pezzarossi (2012) found that deaf undergraduates did not label psychological and physical IPV as abusive, in some cases even if it resulted in injury.

People responding to the survey, therefore, faced complex barriers which could also be linked to structural and societal constructs of gender and the deprivation of language and information in early life. This is likely to have affected the overall completion rate for the

survey and consequently the sample size. It is also understood that the length of online surveys is likely to influence completion rates, with shorter surveys being more successful (Saleh & Bista, 2017). However, in line with recommendations for working with the d/Deaf community, the study sought to collect a range of information regarding early language experiences in order to give greater context to the study's findings (Orfanidou et al., 2015). The result was a longer survey which is likely to have contributed to the dropout rate within data collection. This has ethical implications for the study as higher dropout rates mean many of the responses could not be included within final regression analysis due to lack of useable data. Ultimately, more people may have been exposed to questions about abuse with their data not being useable in final regression analysis. Future surveys in this area of research should carefully consider the length, complexity, and useability of measures to minimise the dropout and limit the number of participants who are unnecessarily exposed to questions about IPV.

The resulting small sample size was a limitation of the empirical study, and this increases the likelihood of type II error in quantitative studies (Akobeng, 2016; Ioannidis, 2005). To some degree, regression analysis is robust and can handle a relatively low sample size. A minimum sample size of 25 cases is recommended to identify the most plausible data pattern (Jenkins & Quintana-Ascencio, 2020). The present analysis was above this threshold, however Jenkins and Quintana-Ascencio (2020) also note that the inclusion of more predictors or smaller effect size should also be taken into account when using this heuristic. The inclusion of aspects relating to the early language experiences of deaf people were categorical in nature, which resulted in an increased number of predictors because of the need to include dummy variables. The post hoc effect size of final regression models was found to be small by Cohen (1992)'s thresholds, and smaller than expected in the research protocol. There is therefore a clear need to address methodology regarding analysis and sampling for

future research into the area of deafness and IPV. This has influenced my learning for future work in this area, I would be more inclined to use a smaller number of predictor variables in order to adequately power the study, knowing that recruitment difficulties are likely to persist in this population, given the inherent difficulties deaf people face in accessing healthcare research.

Conclusion and future directions

This critical reflection identifies several methodological and conceptual difficulties in the preceding thesis chapters, and outlines some of my key learning from the process. particularly within the empirical chapter regarding the studying of deafness and IPV. Although these difficulties are notable and mean that it is difficult to generalise the findings of the study, it can still be justified that the findings from the both the systematic literature review and the empirical study are a useful contribution to the evidence base.

This critical appraisal identifies my learning around approaching research into the deaf population from a hearing-normative perspective, and in future I would have a focus on researching and developing measures for the deaf population with key research questions focussed on the interaction between deafness and power in relationships which I have learnt are key themes across a range of areas in healthcare. These are also key areas for other researchers to be aware of, especially in the context of deafness and IPV. Methodologically, I would focus on research designs which can maximise power from small samples given that there are a range of difficulties in accessing deaf populations for quantitative research and I have developed my awareness as a researcher for working with the marginalised deaf population and the difficulties of approaching this research from the perspective of a hard of hearing, but not deaf, researcher.

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Section Four: Ethics Proposal

Ethics Proposal for the Empirical Study '*Does Intimate Partner Violence and Attachment Predict Well-Being in Deaf Populations*'

William de Gaunza

Doctorate in Clinical Psychology

Division of Health Research

Lancaster University

All correspondence should be sent to:

William de Gaunza
Doctorate in Clinical Psychology
Lancaster University
Health Innovation One
Sir John Fisher Drive
Lancaster University
LA1 4AT

Email: w.degaunza@lancaster.ac.uk

**Faculty of Health and Medicine Research Ethics Committee (FHMREC)
Lancaster University**

Application for Ethical Approval for Research

Title of Project: Does intimate partner violence and attachment predict well-being in deaf populations.

Name of applicant/researcher: William de Gaunza

ACP ID number (if applicable)*: N/A

Funding source (if applicable) DClinPsy

Grant code (if applicable): N/A

***If your project has *not* been costed on ACP, you will also need to complete the Governance Checklist [\[link\]](#).**

Type of study

Involves existing documents/data only, or the evaluation of an existing project with no direct contact with human participants. **Complete sections one, two and four of this form**

Includes *direct* involvement by human subjects. **Complete sections one, three and four of this form**

SECTION ONE

1. Appointment/position held by applicant and Division within FHM Trainee Clinical Psychologist, Doctorate In Clinical Psychology (DClinPsy)

2. Contact information for applicant:

E-mail: w.degaunza@lancaster.ac.uk

Telephone: XXXXXXXXXXXXX

Address: Health Innovation One, Lancaster University, Bailrigg, Lancaster, LA1 4A

Names and appointments of all members of the research team (including degree where applicable):

William de Gaunza

1st supervisor: Professor Bill Sellwood.

External supervisor: Dr Gerasimos Chatzidamianos PhD

3. If this is a student project, please indicate what type of project by marking the relevant box/deleting as appropriate: (please note that UG and taught masters projects should complete **FHMREC form UG-tPG**, following the procedures set out on the [FHMREC website](#))

PG Diploma Masters by research PhD Thesis PhD Pall. Care

PhD Pub. Health PhD Org. Health & Well Being PhD Mental Health MD

DClinPsy SRP [if SRP Service Evaluation, please also indicate here:] DClinPsy Thesis

4. Project supervisor(s), if different from applicant:

1st Supervisor: Professor Bill Sellwood

External supervisor: Dr Gerasimos Chatzidamianos PhD

5. Appointment held by supervisor(s) and institution(s) where based (if applicable):

1st supervisor: Programme Director, Doctorate in Clinical Psychology, Lancaster University.

External supervisor: Senior Lecturer, Manchester Metropolitan University

SECTION TWO

Complete this section if your project involves existing documents/data only, or the evaluation of an existing project with no direct contact with human participants

1. Anticipated project dates (month and year)

Start date: _____ End date: _____

2. Please state the aims and objectives of the project (no more than 150 words, in lay-person's language):

Data Management

For additional guidance on data management, please go to [Research Data Management](#) webpage, or email the RDM support email: rdm@lancaster.ac.uk

3. Please describe briefly the data or records to be studied, or the evaluation to be undertaken.

4a. How will any data or records be obtained?

4b. Will you be gathering data from websites, discussion forums and on-line 'chat-rooms' n o

4c. If yes, where relevant has permission / agreement been secured from the website moderator? n o

4d. If you are only using those sites that are open access and do not require registration, have you made your intentions clear to other site users? n o

4e. If no, please give your reasons

5. What plans are in place for the storage, back-up, security and documentation of data (electronic, digital, paper, etc)? Note who will be responsible for deleting the data at the end of the storage period. Please ensure that your plans comply with General Data Protection Regulation (GDPR) and the (UK) Data Protection Act 2018.

6a. Is the secondary data you will be using in the public domain? no

6b. If NO, please indicate the original purpose for which the data was collected, and comment on whether consent was gathered for additional later use of the data.

Please answer the following question *only* if you have not completed a Data Management Plan for an external funder

7a. How will you share and preserve the data underpinning your publications for at least 10 years e.g. PURE?

7b. Are there any restrictions on sharing your data?

8. Confidentiality and Anonymity

a. Will you take the necessary steps to assure the anonymity of subjects, including in subsequent publications? yes

b. How will the confidentiality and anonymity of participants who provided the original data be maintained?

9. What are the plans for dissemination of findings from the research?

10. What other ethical considerations (if any), not previously noted on this application, do you think there are in the proposed study? How will these issues be addressed?

SECTION THREE

Complete this section if your project includes *direct* involvement by human subjects

1. Summary of research protocol in lay terms (indicative maximum length 150 words):

People who are deaf since birth or early life are more likely to experience domestic abuse, which can impact their mental well-being. Their experiences in early life impact the way they develop language and understanding, which can affect how they relate to others and seek help. Our early experiences in developing relationships can also affect how we cope with distress later in life. The way these things relate to each other are under researched in deaf populations.

This study seeks to explore how the different aspects of domestic abuse might predict mental health problems in people who have been deaf from their early life. It looks at how mental health services, including psychologists, might better understand how commonly used domestic abuse questionnaires can be used to better identify potential mental health problems because of domestic abuse.

2. Anticipated project dates (month and year only)

Start date: May 2022

End date: Jun 2023

Data Collection and Management

For additional guidance on data management, please go to [Research Data Management](#) webpage, or email the RDM support email: rdm@lancaster.ac.uk

3. Please describe the sample of participants to be studied (including maximum & minimum number, age, gender):

Inclusion criteria:

- People who identify themselves as deaf signers
- People who have experienced pre-lingual deafness (before the age of 5), including those who have had medical interventions to improve hearing or use amplification devices (such as cochlear implant).
- People whose preferred language is a sign language.
- Deaf people who have identify themselves as being in an intimate relationship or have previously been in an intimate relationship.
- Deaf people of any gender.

Exclusion criteria:

- People who are under the age of 18

4. How will participants be recruited and from where? Be as specific as possible. Ensure that you provide the *full versions* of all recruitment materials you intend to use with this application (eg adverts, flyers, posters).

- The use of a gatekeeper: SignHealth is a Deaf-led charity with expertise in issues related to access and health. The study will request that SignHealth distribute the survey through a range of platforms (website, social media, and specific interest groups) which will direct towards an anonymous questionnaire. An informal connection has been made with this charity through the research supervisors.
- A range of deaf specific publications and media utilising print and electronic format.
- A range of social media channels, such as twitter, Linked In, Facebook, etc. Personal social media accounts will not be used.
- Deaf specific television media outlets (such as BBC See Hear) will be approached.

5. Briefly describe your data collection and analysis methods, and the rationale for their use.

Survey style questionnaires will be used to collect data, presented online through an appropriate survey platform (i.e., Qualtrics) which will be accessible via computer, smart phone, and tablet.

Regression analysis will be used with the outcome variable being psychological well-being, as measured by the WHO-5.

Predicator variables will include:

- Factors measured by variables of the CTS-2:
 - o psychological aggression
 - o physical assault
 - o negotiation
 - o physical injury
 - o sexual coercion
- Adult attachment style as measured by the Experiences in Close Relationships Questionnaire – Short Form (ECR-S)
- Demographic details indicative of early language exposure, as collected by an enhanced demographics questionnaire. Categorical variables will be included using dummy variables in the regression model.

This study aims to understand if elements of IPV predict levels of psychological well-being. Given there is limited quantitative data currently available around this research question, exploring the variance accounted for in regression models will help to further identify targets for future research and support the development of policy and practice in mental health and IPV services. A factor analysis will also be conducted on the CTS-2; this will aim to confirm if there is a relationship between the variables and the underlying factor structure of the CTS-2, which are identified as possible predictors of well-being.

6. What plan is in place for the storage, back-up, security and documentation of data (electronic, digital, paper, etc.)? Note who will be responsible for deleting the data at the end of the storage period. Please ensure that your plans comply with General Data Protection Regulation (GDPR) and the (UK) Data Protection Act 2018.

Data will be anonymous at point of collection and will be stored on the Lancaster University server as encrypted and password protected Excel and SPSS files. Data will be described with a Readme file containing a description and will be saved with meaningful file names.

When working away from university campus, data may be temporarily stored on an encrypted and password protected drive, before being transferred to the university server by secure VPN.

Professor Bill Sellwood will provide guardianship of the data in his role of research supervisor.

7. Will audio or video recording take place? no audio video

a. Please confirm that portable devices (laptop, USB drive etc) will be encrypted where they are used for identifiable data. If it is not possible to encrypt your portable devices, please comment on the steps you will take to protect the data. N/A

b What arrangements have been made for audio/video data storage? At what point in the research will tapes/digital recordings/files be destroyed?

N/A

Please answer the following questions *only* if you have not completed a Data Management Plan for an external funder

8a. How will you share and preserve the data underpinning your publications for at least 10 years e.g. PURE?

Supporting data will be provided in an electronic format on the journal website, with unrestricted access post-publication. Data will also be deposited in Lancaster University's institutional data repository and made freely available with an appropriate data license. Lancaster University uses Pure as the data repository which will hold, manage, preserve and provide access to datasets produced by Lancaster University research.

8b. Are there any restrictions on sharing your data ?

Data will not be shared externally prior to any publication within relevant academic journals or other publications.

9. Consent

a. Will you take all necessary steps to obtain the voluntary and informed consent of the prospective participant(s) or, in the case of individual(s) not capable of giving informed consent, the permission of a legally authorised representative in accordance with applicable law? yes

b. Detail the procedure you will use for obtaining consent?

Participant information will be provided at the point of accessing the online research survey by potential participants. This will be provided in an accessible format for the participants. Particularly, readability and accessibility statistics (provided through Microsoft Word) for the participant information will be assessed to ensure they are appropriate for people for the deaf population given

their specific language accessibility needs. Pre-recorded BSL video translation of major textual elements, such as participant information, will be provided.

Information will include: rationale for the study, potential for distress statement and relevant details for support, and details of contacts for researchers, and details of withdrawal. Participants will be informed that once they have completed the study, it will not be possible to withdraw their response. All responses will be anonymous, and it will not be possible to identify individual responses once they are submitted.

As an anonymous online survey, this study will not ask participants to provide signed consent. It will indicate that by clicking through to the survey and completing it, they are providing consent for their responses to be used for the purposes of the proposed research.

10. What discomfort (including psychological eg distressing or sensitive topics), inconvenience or danger could be caused by participation in the project? Please indicate plans to address these potential risks. State the timescales within which participants may withdraw from the study, noting your reasons.

Given the focus of the research there is a possibility that some participants might experience some distress as a result of taking part. The participant information sheet will outline the subject matter and the potential distress which could be experienced. The study is not actively looking for abused people which minimises the overall risk of experiencing distress. Participants will be directed towards the SignHealth domestic abuse helpline, which is operated 24/7. They will also be given the details of a range of services (taken from the GOV.UK source). Details of contacts for support will be given and the gatekeeper provides specialist services for deaf populations around the experiences of domestic abuse.

The deaf population can be a close-community and there are legitimate concerns around the transfer of private information. This study may contain answers which are considered sensitive, as such responses will be anonymous at the point of collection and the survey will be hosted online with relevant adaptations to meet the unique communication needs of the sample population. Withdrawal of answers from the study will not be possible after completion of the survey as data will be anonymous at point of collection. Participants will also be given information on ways to minimise risk when using online resources if they are concerned of other people seeing their online history (please see protocol for full details).

11. What potential risks may exist for the researcher(s)? Please indicate plans to address such risks (for example, noting the support available to you; counselling considerations arising from the sensitive or distressing nature of the research/topic; details of the lone worker plan you will follow, and the steps you will take).

There is potential for distress given the subject matter of domestic abuse/intimate partner violence. There is a supervisory structure in place to support researchers with regular contact. Counselling and support services for both student and staff researchers is provided by Lancaster University which can be accessed if required.

12. Whilst we do not generally expect direct benefits to participants as a result of this research, please state here any that result from completion of the study.

There is no direct benefit to participation in this study. However, people may find it a positive experience to participate in the research because of the potential benefit the results may have in supporting those who experience domestic abuse/intimate partner violence.

The research seeks to inform national policy and implementation of legislation as well as best practice in healthcare settings working with deaf populations who present with psychological problems as a result of domestic abuse/intimate partner violence.

13. Details of any incentives/payments (including out-of-pocket expenses) made to participants:

There will be no incentives or payments made to participants of this study.

14. Confidentiality and Anonymity

a. Will you take the necessary steps to assure the anonymity of subjects, including in subsequent publications? yes

b. Please include details of how the confidentiality and anonymity of participants will be ensured, and the limits to confidentiality.

The study data will be anonymous at the point of collection through the online survey. Participants will not be asked to provide any identifying data as part of the research process. Confidentiality may be limited in the environment in which the survey is completed by participants, i.e public places. Furthermore, the survey is accessed via the internet which cannot be considered a completely secure means of communication.

Analysis is quantitative in design (regression analysis) as such individual responses will not be reported.

15. If relevant, describe the involvement of your target participant group in the *design and conduct* of your research.

The study will have engagement from SignHealth as a participant gatekeeper and stakeholder. Introduction to SignHealth is provided by the field supervisor of this project. SignHealth will be approached for consultation around accessibility of survey and dissemination of findings. This project has been developed off the back of a programmatic research project that was based on a series of focus groups with members of the deaf community (funded by the NIHR RDS North West). Also, the present project has been informed by the preliminary results of a qualitative study on domestic abuse in deaf adults, led by the external supervisor, for which the members of the Deaf community were ordinarily involved in line with the INVOLVE agenda (INVOLVE, 2017).

16. What are the plans for dissemination of findings from the research? If you are a student, include here your thesis.

- Summary will be provided to SignHealth, as gatekeeper, and will be encouraged to distribute within their platforms and to relevant special interest groups.
- Submission to journals for publication.
- Participants will have the option to receive summaries – this will be provided by giving contact details for the researchers at the end of the survey.
- Disseminate through thesis and thesis presentation day.

17. What particular ethical considerations, not previously noted on this application, do you think there are in the proposed study? Are there any matters about which you wish to seek guidance from the FHMREC?

N/A

References

INVOLVE (2017), Starting Out – essential information for members of the public getting started in involvement. INVOLVE, Southampton.

SECTION FOUR: signature

Applicant electronic signature:

Date

Student applicants: please tick to confirm that your supervisor has reviewed your application, and that they are happy for the application to proceed to ethical review

Project Supervisor name (if applicable):
discussed

Date application

Submission Guidance

1. Submit your FHMREC application by email to Becky Case (fhmresearchsupport@lancaster.ac.uk) as two separate documents:

- i. **FHMREC application form.**
Before submitting, ensure all guidance comments are hidden by going into 'Review' in the menu above then choosing *show markup>balloons>show all revisions in line*.
- ii. **Supporting materials.**
Collate the **following materials for your study, if relevant, into a single word document:**
 - a. **Your full research proposal (background, literature review, methodology/methods, ethical considerations).**
 - b. Advertising materials (posters, e-mails)
 - c. Letters/emails of invitation to participate
 - d. Participant information sheets
 - e. Consent forms
 - f. Questionnaires, surveys, demographic sheets
 - g. Interview schedules, interview question guides, focus group scripts
 - h. Debriefing sheets, resource lists

Please note that you DO NOT need to submit pre-existing measures or handbooks which support your work, but which cannot be amended following ethical review. These should simply be referred to in your application form.

2. Submission deadlines:

- i. Projects including direct involvement of human subjects [**section 3 of the form was completed**]. The *electronic* version of your application should be submitted to [Becky Case by the committee deadline date](#). Committee meeting dates and application submission dates are listed on the [FHMREC website](#). Prior to the FHMREC meeting you may be contacted by the lead reviewer for further clarification of your application. Please ensure you are available to attend the committee meeting (either in person or via telephone) on the day that your application is considered, if required to do so.
- ii. The following projects will normally be dealt with via chair's action, and may be submitted at any time. [**Section 3 of the form has not been completed, and is not required**]. Those involving:
 - a. existing documents/data only;
 - b. the evaluation of an existing project with no direct contact with human participants;
 - c. service evaluations.

- 3. You must submit this application from your Lancaster University email address, and copy your supervisor in to the email in which you submit this application**

Email Confirming Ethical Approval for Empirical Study

Ethics Approval: FHMREC21045

Monday, 3 October 2022 at 16:53:23 British Summer Time

FHM Research Ethics

de Gaunza, Will (Postgraduate Researcher)

FHM Research Ethics, Sellwood, Bill

Approval of a new application**Subject: Ethics approval FHMREC ref: FHMREC21045**

Dear Will,

Thank you for submitting your research ethics application for the above project for review. The application has been reviewed by members of the FHM Research Ethics Committee and I can confirm that approval has been granted for this project.

As principal investigator your responsibilities include:

- ensuring that (where applicable) all the necessary legal and regulatory requirements in order to conduct the research are met, and the necessary licenses and approvals have been obtained;
- reporting any ethics-related issues that occur during the course of the research or arising from the research to the Research Ethics Officer via this email address (e.g. unforeseen ethical issues, complaints about the conduct of the research, adverse reactions such as extreme distress);
- submitting details of proposed substantive amendments to the protocol to the Research Ethics Officer for approval.

Please contact me on ***** if you have any queries or require further information.

Best wishes,

Research Protocol

Does intimate partner violence and adult attachment style predict well-being in deaf populations?

Applicant: William de Gaunza

Supervisor: Professor Bill Sellwood

Version number: 2.4

Date: 24/03/2023

Introduction

It is estimated that 12 million people are deaf or hard of hearing in the United Kingdom (Royal National Institute for Deaf People, 2020). The term *deaf* (lower case) is used to describe someone who has severe audiological problems. People who have a strong Deaf identity and use their national sign language identify themselves as a separate cultural and linguistic community. This is distinguished using *Deaf* (uppercase) (Padden & Humphries, 1989). This study adopts the term *deaf* in order to discuss the literature with scope to incorporate a wide understanding of people who are currently experiencing deafness and its interactions with intimate partner violence (IPV). This includes considering individuals who may have had medical interventions, such as cochlear implants, but continue to experience significant hearing problems.

Poor access to appropriate communication and a lack of deaf awareness in hearing communities can have significant impact on the physical and psychological needs of those deaf people who use sign language (du Feu, 2017). Sign languages are syntactically and grammatically distinct from other languages; as a result, sign language users have challenges accessing health information and services. For example, they experience a range of linguistic,

procedural, and cultural challenges when accessing written psychological self-report measures (Chatzidamianos et al., 2021). Deaf people may decline access to GP services for fears around their communication needs (Action on Hearing Loss, 2013). In addition to this, there is an increased risk that deaf people will experience mental health problems that require specialist services (du Feu & Fergusson, 2003; Fellingner et al., 2012; Kvam et al., 2007). For example, severely deaf signers with schizophrenia may present with linguistic impairments in the context of thought disorder which are unparalleled in hearing populations (Chatzidamianos et al., 2018). Deaf people are twice as likely to experience abuse and barriers in accessing the information needed to stay safe (SignHealth, 2020). Deaf populations are also more likely to suffer prolonged periods of traumatic abuse which lead to specialised psychological and physical health needs (du Feu & Chovaz, 2014).

Of these forms of traumatic abuse, domestic abuse and IPV represents a range of behaviours which may be experienced by a victim. The Crime Survey for England and Wales estimated that 2.3 million adults were victims of domestic abuse between 2019 and 2020 (Office for National Statistics, 2020). The prevalence of IPV within deaf populations has been found to be higher than in the general population, being estimated to be as high as: 91% for emotional/psychological IPV (Anderson & Leigh, 2011), 61% for sexual abuse (Anderson & Leigh, 2011), and 53.8% for physical abuse (Pollard et al., 2014) The impact of these behaviours on the victims' psychological well-being can be complex and severe with associated psychiatric conditions including post-traumatic stress disorder (PTSD), depression, anxiety, and eating disorders (Ellsberg & Emmelin, 2014).

Deaf people are likely to have problems accessing healthcare services to treat such disorders, they experience informational deprivation at every personal and societal level (Mastrocinque et al., 2017) which impacts their ability to comprehend, respond, and seek help for IPV. This means that they may not recognise or identify abuse when it occurs and

may be underrepresented in clinical samples, which are often used to research the impact of IPV. These problems are likely to be impacted by the early life experiences of deaf people, especially if they are not exposed to adequate and appropriate language provision, such as sign-languages, from an early age.

Early life experiences are thought to influence the prevalence and outcomes of IPV. Attachment theory (Bowlby, 1971) posits that infants develop a working model of future relationships based on early attachment figures. This working model influences responses to attachment figures and can identify patterns of security and insecurity in these relationships with two underlying dimensions – attachment anxiety and avoidance (Ainsworth et al., 1979). Adults rely on romantic partners for security and the fulfilment of emotional needs. Adults also form mental representations about the self and others, and these views are linked with how they relate to attachment figures (Feeney, 2016). Insecure attachment styles (both anxious and avoidant) have shown to have positive associations between victimization measures of physical abuse, psychological abuse, and sexual coercion in (Bonache et al., 2016; Sommer et al., 2016). Adult attachment styles have been found to be related to the mental health outcomes of IPV victimisation. Insecure attachment styles have been shown to moderate the relationship between IPV and PTSD (Scott & Babcock, 2010), and IPV and depression (La Flair et al., 2015; Smagur et al., 2018) in community and college samples.

Attachment theory places emphasis on the importance of the relationship between a child their primary attachment figure in early life. 90% of deaf people are born to hearing parents (Mitchell & Karchmer, 2004), the majority of whom do not know sign language. This means they are likely to experience unique difficulties in developing relationships; deaf children who are most competent in social, cognitive, and language development are those who are able to participate actively in linguistic interactions with their parents (Marschark & Clark, 1993). However, evidence for the impact of poorer communicating dyads upon

attachment is somewhat mixed (Vaccari & Marschark, 1997), more recently research suggests that having a hearing parent to a deaf child does not, in itself, result in insecure attachment patterns (McKinnon et al., 2004). However, this area is under researched and does not consider the nuances of hearing-deaf dyadic relationships in parent-child relationships.

There are a range of nuanced factors that can affect the development of deaf children born to hearing parents (Morgan et al., 2021). For example, hearing parents to deaf children may develop idiosyncratic methods of communicating or an understanding of sign languages which can support language development in deaf children, although at a lower quality than sign fluent parent (Lu et al., 2016). Since the introduction of new-born hearing screening in 2006 most deaf children in the UK are diagnosed before the age of 6 months and, if eligible, medical intervention can be offered. Deaf children who receive cochlear implants (CI) prior to the age of three develop speech processing abilities in advance of those predicted for a child without CI (Stacey et al., 2006). However, CI is not equitable to natural hearing and deaf children with CI show poorer outcomes in educational and language outcomes (Lyness et al., 2013).

Within the context of deaf research, Orfanidou et al. (2015) suggest that a range of these factors which are known to affect the development of language are collected and considered in the research outcomes. A lack of exposure to language in early life can result in language deprivation (Glickman, 2018) and deaf people may experience they may experience fund of knowledge deficits at every societal level (Mastrocinque et al., 2017). In the context of IPV, this can impact a deaf person's ability to recognise abuse and seek help (Anderson & Kobek Pezzarossi, 2012; Schild & Dalenberg, 2016). As a result, deaf victims of IPV may experience a greater likelihood of specific mental health symptoms (Schild & Dalenberg, 2012).

Research has applied commonly used measures of IPV, such as the Conflict Tactics Scale Revised (CTS 2) (Straus et al., 1996) in deaf populations (Anderson & Leigh, 2010). But it is important to better understand how the experiences of IPV might impact and predict the psychological needs of the deaf population. This is particularly important in the context of attachment and early life exposure to language given the unique life experiences and communication needs that the deaf population have in understanding, labelling, and communicating their experiences of abuse and distress. Although some attention has been paid to the area of IPV in the deaf population, the impact of attachment style and early experiences of language on the psychological well-being of deaf victims of IPV remains unclear. The small number of studies addressing IPV in deaf populations often rely on samples which may not be representative of the population given their unique needs in accessing information, services, and support for IPV.

Consequently, this study will aim to look at the relationship between IPV, and subsequent psychological wellbeing in deaf people. It will aim to address previous methodological issues which have been noted across the current research base concerning deafness and IPV. Specifically, this study hypothesises that factors of intimate partner violence, attachment style, and experiences of language in early life will predict psychological well-being in the deaf population.

Method

Participants

Power. Previous studies exploring the relationships between IPV and mental health have found modest/medium effect sizes (Ludermir et al., 2008; Mechanic et al., 2008; Moulding et al., 2021). As such an estimate of a moderate effect size has been used to power the study ($f^2 = .15$). Power was calculated using G*Power (Faul et al., 2007) with linear multiple regression model with 7 tested predictors for a study powered at 80% with a 95%

confidence interval. This study requires a sample size of at least 103 participants, with no upper limit as priori quantitative evidence of the expected effect size for each variable and potential collinearity is not available.

Inclusion criteria. The following inclusion criteria have been chosen to provide a representative sample.

- People who identify themselves as deaf signers.
- People who are congenitally deaf or experienced deafness onset within the first 5 years of their life, which is considered to be the critical period for language acquisition (Mayberry & Lock, 2003; Newport, 1990). The study will include those who have had medical interventions to improve hearing or use amplification devices (such as cochlear implant and bone anchored hearing aids).
- People whose preferred language is a sign language.
- Deaf people who have identified themselves as being in an intimate relationship or have previously been in an intimate relationship.
- Deaf people of any gender.

Exclusion criteria. Participants under the age of 18 years will be excluded. This is due to the subject matter of intimate partner violence and the potential for distress. There will be no upper age limit.

Design

This study will be quantitative and correlational in design, such designs are particularly advantageous for research of an exploratory nature (Gravetter & Forzano, 2018).

Measures will collect data for the predictor variables of experiences of: IPV victimisation, attachment, and early experiences of language. Consideration has been given to the unique needs of the deaf population to ensure accessibility and suitability of materials. Measures will have been identified as appropriate for use within the deaf population, either

by previous test score interpretation of reliability and validity, or through identification of specialist measures developed for the deaf population. Deaf populations have been identified as having greater difficulty accessing health related literacy (McKee et al., 2015) and it is identified that around 60% of deaf sign language users read between the 3rd and 6th grade (US school grade system) (Lavigne & Vernon, 2003). For this reason, measures have also been assessed for readability using the Flesch-Kincaid reading ease score to assess suitability for use within this study. The Flesch-Kincaid reading ease score gives a total index score out of 100, with higher scores indicating material that is easier to read (Flesch, 1948). A score of 80/100 corresponds to a 6th grade (age 11-12) reading level and therefore all material within this study should demonstrate a reading ease score of 80 or higher.

Materials

World Health Organisation 5 well-being index (WHO-5). The WHO-5 (WHO, 1998) will be used to collect data for the outcome variable of subjective mental well-being.

The WHO-5 is a short, 5 item, self-reported measure of current mental wellbeing. The scale is suitable for use with adults has adequate validity as a screening tool for depression and as an outcome measure across a wide range of study fields (Topp et al., 2015).

The WHO-5 consists of 5 statements which respondent's rate using a 6-point Likert scale according to their experiences over the previous 2 weeks.

A total raw score is calculated by summing each of the 5 responses (range 0-25), a percentage score is gained by multiplying the raw score by 4, with 0 representing the worst imaginable well-being and 100 representing the best imaginable wellbeing.

The items of the WHO-5 demonstrate a Flesch-Kincaid reading ease level of 90/100 which corresponds to a reading grade of 2.6, meaning it is likely to be accessible to deaf populations.

Conflict Tactics Scale – Revised (CTS2) – victimisation scale. The CTS2 (Straus et al., 1996) will be used to collect data for the variables of IPV experience, which will include negotiation, psychological aggression, physical assault, sexual coercion, and injury.

The CTS2 is designed to measure the nature and frequency of tactics used to manage conflict in an intimate relationship. The scales consist of 39 item pairs which assess how frequently they have been a victim (victimisation scale) or a perpetrator (perpetration scale) of each act. The CTS 2 requires respondents to rate the number of times within the previous year they have committed specific IPV behaviours and how many times they were on the receiving end of such behaviours over the past year. The response categories are: *Never, once in the past year, twice in the past year, 3–5 times in the past year, 6–10 times in the past year, 11–20 times in the past year, more than 20 times in the past year, and not in the past year, but it did happen before.* Overall chronicity scores are computed by adding the mid points for the response categories for each item.

This study proposes to use only the victimisation scale items as the experiences of perpetration are outside of the scope of the research question and inclusion of the replicated perpetration items is likely to negatively impact the number of completed responses due to the increased length of the survey. The scale has been used to measure the construct of IPV within deaf populations and the results showed evidence for validity and reliability of the test score interpretations for the construct of IPV victimisation (Anderson & Leigh, 2010).

It has been considered that the introductory paragraph for the CTS2 uses language and an explanation that may be considered outdated by some. A note will be added before this statement which recognises this and makes it clear that questions related to abuse will be asked:

“Note: The next questions are about physical and sexual abuse. We do not agree with the words the original authors use to talk about abuse but we cannot change them. Copyright rules do not let us do that. We are sorry for this.”

In order to present only the victimisation questions of the CTS2 items it is necessary to modify some of the questions to make them accessible to the deaf audience who would, otherwise, need to base their response on their ability to process exophoric reference across two consecutive items. This would unnecessarily increase the associated cognitive load and risk obtaining a response that does not reflect their opinion and could result in participants withdrawing from the study. For this purpose, items are adapted as the example below:

Original CTS2 questions 7 and 8:	7. <i>I threw something at my partner that could hurt.</i>
----------------------------------	--

8. *My partner did this to me.*

Adapted to present victimisation scale only:	<i>My partner threw something at me that could hurt.</i>
--	--

After the adaptation of these items, the CTS2 victimisation scale receives Flesch-Kincaid reading ease score of 85.5/100 which corresponds to a grade of 3.7, meaning it is likely to be accessible to deaf populations.

Experiences in Close Relationships Questionnaire – Short Form (ECR-S). The ECR-S (Wei et al., 2007) is a 12 item self-report adult attachment style questionnaire focussed on close relationships. The measure is a shortened version of Brennan et al. (1998)'s Experiences in Close relationships Scale and is designed to be used in research in adult attachment styles. The ECR-S is based on Ainsworth et al. (1979)'s infant attachment styles, the scale measures maladaptive attachment in adulthoods who are in a romantic relationship.

Responses are given across a 7-point Likert scale from 1 (strongly agree) to 7 (strongly disagree). The ECR-S gives scores on the two factors of avoidant and anxious attachment style. Results consist of two scores for the two separate factors: attachment anxiety and attachment avoidance. The minimum score for each scale is 7 and a maximum score of 42, with higher scores indicating more insecure attachment in one or both domains.

The ECR-S has been assessed for ease of readability. The ECR-S has produced a Flesch-Kincaid reading ease score of 80/100, which corresponds to a reading grade of 6, meaning the ECR-S may be generally accessible to the deaf population.

Demographics questionnaire. The demographics questionnaire will collect data for the variable of early language experiences. Orfanidou et al. (2015) indicate that studies addressing the factors that impact early language acquisition within the deaf population should make proper use of an extended and comprehensive demographics questionnaire to obtain the data which describes their early language experiences:

- Age (collected as categorical data)
- Gender: male, female, non-binary, transgender, gender fluid, prefer not to say and other (free text).
- Age of diagnosis of deafness.
- Use of amplification devices (if yes, subordinate question of age started using):
 - Cochlear implant
 - Traditional hearing aid – behind the ear, in ear hearing aid.
 - Bone Anchored Hearing Aid (BAHA)
- Language preference:
 - Sign language (which national sign language)

- Age of exposure to sign languages (if appropriate to participant)
 - Spoken language
- Relationship status – participants who have not experienced an intimate relationship will not be included in the project.
 - Hearing status of partner.
 - Preferred language of partner – sign language or spoken language
- School experience – mainstream education, deaf school, mainstream with sign support.
- Hearing status of parents: deaf, hearing, hard of hearing.
 - Preferred language in home environment (signing or spoken language)
 - Type of sign language used (national sign language or home signs)
- Do you consider yourself a survivor of intimate partner violence or domestic abuse?
 - coercive control and ‘gaslighting’
 - economic abuse
 - online abuse
 - threats and intimidation
 - emotional abuse
 - sexual abuse

Procedure

The study will be advertised, and participants recruited primarily using gatekeeper facilitation. Advert material (Appendix A) has been assessed using readability statistics and found to be above 80 making it likely that it will be accessible to the deaf population. SignHealth is a Deaf-led charity with expertise in issues related to access and health. The study will request that SignHealth distribute and advertise the survey through a range of platforms (website, social media, and specific interest groups) which will direct towards an anonymous online survey questionnaire (Appendix B), hosted by experience management software (Qualtrics, 2020). Pre-recorded video BSL translation will be provided for large sections of text in the survey, such as the participant information. Several outlets will be approached to publicise the study, and direct participants to the study, these will include:

- A range of deaf specific publications and media utilising print and electronic format.
- A range of social media channels, such as twitter, Linked In, Facebook, etc. Personal social media accounts will not be used.
- Deaf specific television media outlets (such as BBC See Hear) will be approached.

When arriving at the online survey, participants will be presented with a participant information sheet (Appendix C) which will outline the study rationale and what is involved with participation. This information sheet has been assessed for ease of readability using readability statistics and found to be of a suitable reading ease for the deaf population. In summary, it includes:

- An outline of the study in lay terms, including an explicit description of the themes and topics covered within the survey. It will describe the nature of participation being a survey, with an anticipated completion time of 20 minutes.
- Information regarding anonymity and confidentiality: this study will be anonymous at the point of data collection. Confidentiality may be limited in the environment in

which the survey is completed by participants, i.e public places, furthermore the survey is accessed via the internet which cannot be considered a completely secure means of communication.

- Information regarding potential benefits will be presented: there are no anticipated direct benefits to participating in this study. However, it is recognised that participants may appreciate the opportunity to engage in a study which may have important implications for clinical practice and may inform policy/legislation around domestic abuse.
- Information about potential risks will be presented: There is potential for the study to elicit feelings of distress given the subject matter. This will be made clear to participants and details of contacts for support will be given. Notably, the gatekeeper provides specialist services for deaf people who have experienced domestic abuse. It will also include information and links to guidance around safe browsing and completion of the survey, given that there is a risk of their responses being discovered by potential abusers.
- Participants will be informed that once they have completed the study, it will not be possible to withdraw their response. All responses will be anonymous, and it will not be possible to identify individual responses once they are submitted.
- Participants will be directed towards the primary researcher and research supervisor should participants wish to contact the study at any point during the study. Email addresses for the primary researcher (w.degaunza@lancaster.ac.uk) and research supervisor (b.sellwood@lancaster.ac.uk) will be provided.

Following the participant information sheet, participants will be presented with an informed consent page (Appendix D) and they will be asked to confirm that they have read and understood the information and risks associated with participation. As an anonymous online

survey using Qualtrics experience management software; this study will not ask participants to provide signed consent. It will indicate that by clicking through to the survey and completing it, they are providing consent for their responses to be used for the purposes of the proposed research.

Participants will be presented with the measures below. The enhanced demographics questionnaire will be presented first in all cases, the other measures will be randomised to manage order effects.

- Enhanced demographic questionnaire
- WHO-5
- CTS2 victimisation scale.
- ECR-S

Upon completion of the survey, participants will be asked to submit their responses and presented with a debrief page (Appendix E) which has been assessed for ease of readability and found to have a readability score higher than 80. This will remind them that their data cannot be withdrawn after submission. The details of help (SignHealth domestic abuse helpline and GOV.UK services) and contact details for the researchers will be presented again. Participants will be thanked for their time.

Data will be stored on the Lancaster University server as encrypted and password protected Excel and SPSS files. Data will be described with a Readme file containing a description and will be saved with meaningful file names. When working away from university campus, data may be temporarily stored on an encrypted and password protected drive, before being transferred to the university server by secure VPN. Following publication, supporting data will be provided in an electronic format on the journal website, with unrestricted access post-publication. Data will also be deposited in Lancaster University's institutional data repository and made freely available with an appropriate data license.

Lancaster University uses Pure as the data repository which will hold, manage, preserve and provide access to datasets produced by Lancaster University research.

Bill Sellwood will provide guardianship of the data in the role of research supervisor.

Analysis

Regression analysis will be used with the outcome variable being psychological well-being, as measured by the WHO-5. Predictor variables will include: IPV victimisation (psychological aggression, physical assault, negotiation, physical injury, sexual coercion), adult attachment anxiety and avoidance (as measured by the ECR-S), and demographic details indicative of early language experiences. Categorical variables will be included using dummy variables in the regression model.

This study aims to understand if elements of IPV, adult attachment, and language demographics predict levels of psychological well-being. Given there are limited quantitative data currently available around this research question, exploring the variance accounted for in regression models will help to further identify targets for future research and support the development of policy and practice in mental health and IPV services.

Practical issues

There is a potential for recruitment difficulties and uptake of survey studies. Consultation with SignHealth will help to ensure effective promotion of the study.

The survey will need to be accessible to the deaf population. Pre-recorded BSL translation will be provided for large sections of text, such as participant information. This will be produced by a professional translator, external to the study, and embedded as a video within the online survey. Ideally, responses would also be recorded in BSL too. However, this would be very expensive and would require a team of bilingual researchers and would require more time to complete the operational aspects of the study as well as remove anonymity of the respondents. This has been addressed by assessing survey items using

readability statistics and using more accessible response forms (such as sliding scales for Likert responses) which will help to ensure the survey is accessible to deaf populations. This provides an appropriate response to the accessibility needs of the deaf population while maximising the realistic opportunity to collect and analyse meaningful data within the scope and context of the proposed study.

Ethical concerns

Potential for the study to elicit feelings of distress given the subject matter. Participant information sheet will outline the subject matter and the potential distress which could be experienced clearly. Details of contacts for support will be given and the gatekeeper provides specialist services for deaf populations around the experiences of domestic abuse. Participants will be directed towards the SignHealth domestic abuse helpline, which is operated 24/7 and the GOV.UK hub for support for victims and reporting of domestic abuse.

Deaf communities can be a close-knit and there are legitimate concerns around the transfer of private information. This study may contain answers which are considered sensitive, as such responses will be anonymous at the point of collection and the survey will be hosted online with relevant adaptations to meet the unique communication needs of the sample population.

There is an increased risk that respondents engagement with the survey may be detected by potential abusers. Particularly given both the potential proximity and controlling behaviours of abusers, and the potentially reduced social support network of the deaf population. Guidance, information, and links will be provided to support respondents to help manage their safety and visibility online.

Timescale

- Sep 2022: Advertise study and begin data collection.
- March 2023: Complete data collection.

- April 2023: Complete data analysis.
- May 2023 – Jun 2023: Write up results.
- Jun 2023: disseminate and feedback results to participants.

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Appendix A - Study advertisement



Deafness and Domestic Abuse

Research study participants needed

We are looking at the impact of domestic abuse on the psychological well-being of deaf people. Can you spare some time to complete a survey about your experiences?

Who can take part?

We are looking for people who identify as deaf signers who are over the age of 18.

You can go to the link below to take part or find out more:

[Link here](#)

w.degaunza@lancaster.ac.uk

Appendix B - Online survey

Deafness and Intimate Partner Violence

How old are you?

- 18 - 20
 - 21 - 30
 - 31 - 40
 - 41 - 50
 - 51 - 60
 - 61 - 70
 - 71 - 80
 - 81 - 90
 - 91+
-

What is your gender:

- Male
 - Female
 - Non-binary / third gender
 - Gender fluid
 - Prefer not to say
 - Other _____
-

Page Break _____

What is your current relationship status?

- I am currently in a relationship with a partner.
- I am not currently in a relationship with a partner, but I have had relationships in the past.
- I am not currently in a relationship with a partner and I have not had any intimate relationships in the past.
-

What age were you when you received a diagnosis of deafness, please type below:

Do you use a hearing amplification device such as hearing aids or a cochlear implant?

- Yes
- No
-

Which of the below best describes the main type of amplification device you use?

- Cochlear implant
- Traditional hearing aid (behind ear or in ear).
- Bone Anchored Hearing Aid (BAHA)
-

Do you use a sign language?

- Yes
- No
-

Which sign language do you prefer to use?

- National Sign Language (BSL, ASL, Auslan etc)
- Home signs
- Other (please type below)
-

Which national sign language do you prefer to use to communicate (i.e. BSL, ASL, Auslan etc), please type below:

What age were you when you were first started to use sign languages? Please type below:

What language do you prefer to use to communicate?

- Sign Language
- Spoken Language
-

What was the hearing status of your most recent partner?

- Deaf
- Hearing
- Hard of Hearing
-

What was your most recent partner's preferred language?

- Sign language
 - Spoken language
-

What was the gender of your most recent partner?

- Male
 - Female
 - Non-binary / third gender
 - Gender fluid
 - Prefer not to say
 - Other (please type below)
-

What is the hearing status of your partner?

- Deaf
 - Hearing
 - Hard of Hearing
-

What is your partner's preferred language?

- Spoken language
 - Sign Language
-

What is the gender of your partner?

- Male
- Female
- Non-binary / third gender
- Gender fluid
- Prefer not to say
- Other (please type below)
-

What was the hearing status of your parents when you were a child? Please select one statement for each parent.

	Deaf	Hard of Hearing	Hearing	Not applicable or not known
Parent 1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Parent 2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What was the preferred language in your home when you were a child?

- Sign language
- Spoken language

What sign language was used in your home when you were a child?

- National sign language (such as BSL, ASL, Auslan)
- Home signs

Which of these best describes your school experience?

- Mainstream school
- Mainstream school with sign support
- Deaf specialist school

Do you consider yourself a survivor of intimate partner violence or domestic abuse?

- Yes
 - No
 - Unsure
-

What type of domestic abuse or intimate partner violence do you feel you are a survivor of?

- Coercive control and ‘gaslighting’
- Economic abuse
- Online Abuse
- Threats and intimidation
- Emotional abuse
- Sexual abuse
- Physical abuse




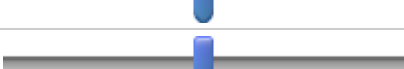

Note: The next questions are about physical and sexual abuse. We do not agree with the words the original authors use to talk about abuse but we cannot change them. Copyright rules do not let us do that. We are sorry for this.

No matter how well a couple gets along, there are times when they disagree, get annoyed with the other person, want different things from each other, or just have spats and fights because they are in a bad mood, are tired, or for some other reason. Couples also have many

My partner choked me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My partner shouted or yelled at me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My partner slammed me against a wall.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My partner said they were sure we could work it out.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I needed to see a doctor because of a fight with my partner, but I didn't.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My partner beat me up.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My partner grabbed me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My partner used force (like hitting, holding down, or using a weapon) to make me have sex.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My partner stomped out of the room or house or yard during a disagreement.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My partner insisted on sex when I did not want to (but they did not use physical force).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please indicate for each of the five statements which is closest to how you have been feeling over the last two weeks.

Notice that higher numbers mean better well-being.

	At no time.	Some of the time	Less than half of the time	more than half the time	Most of the time
	0	1	2	3	4
I have felt cheerful and in good spirits.					
I have felt calm and relaxed.					
I have felt active and vigorous.					
I woke up feeling fresh and rested.					
My daily life has been filled with things that interest me.					

Appendix C - Participant information sheet.**Participant Information Sheet****Domestic Abuse in Deaf Adults****What is this information about?**

We are asking you if you want to take part in a research project about domestic abuse in deaf people. Domestic abuse can include lots of different types of abuse. This survey will ask questions about these different types of abuse, including questions about emotional abuse, physical violence, and sexual violence. It's important to read the information below so you know what to expect.

This information tells you why we are doing the research and what it will mean if you choose to take part. Please ask us, using the contact details below, if you do not understand any of the information. Take time to decide whether to take part or not.

You can say **yes or **no** to taking part.**

**Cover your tracks online!****Why might I need to do this?**

This survey asks questions about domestic abuse. If you are worried about somebody knowing you have visited this survey, then you should read the information below, and find more resources at: [Womensaid.org.uk/cover-your-tracks-online](https://www.womensaid.org.uk/cover-your-tracks-online)

Internet browsers save information as you surf the internet, this can include a trail of the

websites and/or links you follow. If you don't use a password to log into your computer or device, then other people will be able to see this information.

How can I cover my tracks online?

The safest way to find information on the internet may be at a public computer (like a library computer), at a friend's house, or at work.

All popular internet browsers have a "private browsing mode". These can stop traces of the websites you have visited being stored on your computer. The most popular ones are:

- **Internet Explorer:** Go to Safety – Tools – “InPrivate Browsing”.
- **Firefox:** Click the Menu button with three horizontal lines – “New Private Window”.
- **Chrome:** Click the Menu button with three horizontal lines and select “New Incognito Window”.

Can I delete information from my browser?

If you are worried about someone viewing your internet history, you can delete this information from your device. See Womensaid.org.uk/cover-your-tracks-online for ways to do this.

Who are we?

My name is Will de Gaunza and I am carrying out research as a student of the Doctorate in Clinical Psychology programme at Lancaster University, Lancaster, United Kingdom.

We are trying to understand deaf people's experiences of domestic abuse. This can help us develop better services for deaf people. We are looking at the relationship between domestic abuse and the mental well-being of deaf people.

Who can take part?

We are looking for deaf signers who are over the age of eighteen. We are looking for people who have been deaf since birth or before the age of five. We are including people who have had medical help for their hearing, such as BAHA's or people who use hearing aids.

What will happen if I take part in this research project?

We will ask you to fill in a survey about yourself on the internet. This will ask about your hearing and language preferences, your mental well-being, and questions about domestic abuse. It will take around 25 minutes to complete.



Do I have to take part?

No. It is up to you to whether you want to take part or not. We will ask you to confirm if you are happy to continue to the survey.

**What will happen to the information I give?**

We will not ask for your name. Therefore, no one will be able to find out that you took part in the study.



We will store your data safely and securely on a computer for 10 years. Only the researchers will have access to this and we will password protect the computer files.



We will sum up the results and report them in a thesis for the Doctorate in Clinical Psychology. We also plan to submit this report to a research or professional magazine.

Me and my supervisors will tell people our results in different ways. This might include reports, presentations, and the internet.

Are there any risks to me taking part?

There are no risks expected when taking part in this study. However, this study does ask explicit questions about different types of abuse, including physical and sexual violence. Some people might find this distressing. If you experience any problems, you can inform the researcher and contact specialist support through SignHealth, please see the details below:

SignHealth Domestic Abuse Service

Text: 07800 003421

Email: da@signhealth.org.uk

Website: <https://signhealth.org.uk/with-deaf-people/domestic-abuse/>

**THE DEAF HEALTH
CHARITY
SIGNHEALTH**

GOV.UK also has a range of services to support people who are victims of domestic abuse, or if you think another person might be a victim. You can find these at:

<https://www.gov.uk/guidance/domestic-abuse-how-to-get-help#get-help-and-support>

**Are there any advantages to taking part?**

No. However, some people find it interesting. It will help us better understand domestic abuse in deaf people. It will also help us understand how we can improve the services offered to deaf survivors of domestic abuse.

Who has reviewed this research project?

This study has been reviewed and approved by the Faculty of Health and Medicine Research Ethics Committee at Lancaster University.

What if I need to complain?

If you wish to make a complaint or raise concerns about any aspect of this study and you do not want to speak to the researcher, you can contact:

Dr Ian Smith Tel: (01524) 592282
Email: i.smith@lancaster.ac.uk
Department of Health Research
Lancaster University
Lancaster
LA1 4YW

Dr Laura Machin Tel: +44 (0)1524 594973
Chair of FHM REC Email: l.machin@lancaster.ac.uk
Faculty of Health and Medicine
Lancaster University
Lancaster
LA1 4YW

Cover your tracks! *emails can be seen by other people with access to your device. If you are concerned about this, learn how to cover your tracks at: [Womensaid.org.uk/cover-your-tracks-online](https://www.womensaid.org.uk/cover-your-tracks-online).*

Any questions?

If you have any questions about the study, please contact me:
Will de Gaunza: w.degaunza@lancaster.ac.uk

Alternatively, my research supervisor:
Professor Bill Sellwood: b.sellwood@lancaster.ac.uk



Appendix D - Consent Form

Please choose below whether you would like to continue to the survey:

If you choose to continue to the survey, you confirm that you have read the information provided and:

- You are over the age of 18.
- You are aware that the survey will ask explicit questions about abuse, including physical and sexual violence.
- You know that the survey is anonymous and your data will be securely stored.
- You aware that you can withdraw from the project at any time before you have completed the survey. After you have completed the survey, it will not be possible to withdraw your data.
- You know there are no direct benefits to taking part in the survey, but some people might find it interesting.

Yes, I would like to take part in the research project.



No, I do not want to take part in this research project



Appendix E – Debrief sheet

Debrief sheet

Thank you for completing this survey.

This study looks at deaf people's experiences of violence in relationships and how it might affect their mental health. It is thought that the deaf people may be more likely to experience this kind of violence. It is also thought that this might lead to more problems with their mental health. We will look at your answers to better understand the impact of this on deaf people. The results from this study will aim to help services understand the needs of deaf victims of domestic abuse better.

We can't provide results for your answers alone. But you can ask us any questions you have about this study, or ask for a copy of the overall results. You can do this by contacting us using the details below:

Main researcher:

Will de Gaunza: w.degaunza@lancaster.ac.uk

Or the research supervisor:

Professor Bill Sellwood: b.sellwood@lancaster.ac.uk

If you have experienced any distress because of the topic of this study, you can access dedicated support through SignHealth, who are a dedicated charity for the health and well-being of deaf people:

SignHealth Domestic Abuse Service

Text: 07800 003421

Email: da@signhealth.org.uk

Website: <https://signhealth.org.uk/with-deaf-people/domestic-abuse/>

GOV.UK also has a range of services to support people who are victims of domestic abuse, including ways to report domestic abuse emergencies. You can find these at:

Website: <https://www.gov.uk/guidance/domestic-abuse-how-to-get-help#get-help-and-support>

Complaints

If you wish to make a complaint or raise concerns about any aspect of this study and do not want to speak to the researcher, you can contact:

Dr Ian Smith Tel: +44 (01524) 592282

Email: i.smith@lancaster.ac.uk

Department of Health Research

Lancaster University
Lancaster
LA1 4YW

If you wish to speak to someone outside of the Doctorate in Clinical Psychology Programme, you may also contact:

Dr Laura Machin Tel: +44 (0)1524 594973
Chair of Faculty of Health and Medicine Research Ethics Committee
Email: l.machin@lancaster.ac.uk
Faculty of Health and Medicine
(Lancaster Medical School)
Lancaster University
Lancaster
LA1 4YW

Cover your tracks! *Emails can be seen by other people with access to your device. If you are concerned about this, learn how to cover your tracks at: [Womensaid.org.uk/cover-your-tracks-online](https://www.womensaid.org.uk/cover-your-tracks-online).*

Appendix F – Copy of WHO5 well-being index



Psychiatric Research Unit
WHO Collaborating Centre in Mental Health

WHO (Five) Well-Being Index (1998 version)

Please indicate for each of the five statements which is closest to how you have been feeling over the last two weeks. Notice that higher numbers mean better well-being.

Example: If you have felt cheerful and in good spirits more than half of the time during the last two weeks, put a tick in the box with the number 3 in the upper right corner.

<i>Over the last two weeks:</i>	All the time	Most of the time	More than half of the time	Less than half of the time	Some of the time	At no time
1. I have felt cheerful and in good spirits	5	4	3	2	1	0
2. I have felt calm and relaxed	5	4	3	2	1	0
3. I have felt active and vigorous	5	4	3	2	1	0
4. I woke up feeling fresh and rested	5	4	3	2	1	0
5. My daily life has been filled with things that interest me	5	4	3	2	1	0

Scoring:

The raw score is calculated by totaling the figures of the five answers. The raw score ranges from 0 to 25, 0 representing worst possible and 25 representing best possible quality of life.

To obtain a percentage score ranging from 0 to 100, the raw score is multiplied by 4. A percentage score of 0 represents worst possible, whereas a score of 100 represents best possible quality of life.

Interpretation:

It is recommended to administer the Major Depression (ICD-10) Inventory if the raw score is below 13 or if the patient has answered 0 to 1 to any of the five items. A score below 13 indicates poor wellbeing and is an indication for testing for depression under ICD-10.

Monitoring change:

In order to monitor possible changes in wellbeing, the percentage score is used. A 10% difference indicates a significant change (ref. John Ware, 1995).

Appendix G – Copy of Experiences in Close Relationships Scale – Short Form**Experiences in Close Relationship Scale-Short Form (ECR-S)**

Instruction: The following statements concern how you feel in romantic relationships. We are interested in how you generally experience relationships, not just in what is happening in a current relationship. Respond to each statement by indicating how much you agree or disagree with it. Mark your answer using the following rating scale:

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

1. It helps to turn to my romantic partner in times of need.

2. I need a lot of reassurance that I am loved by my partner.

3. I want to get close to my partner, but I keep pulling back.

4. I find that my partner(s) don't want to get as close as I would like.

5. I turn to my partner for many things, including comfort and reassurance.

6. My desire to be very close sometimes scares people away.

7. I try to avoid getting too close to my partner.

8. I do not often worry about being abandoned.**9. I usually discuss my problems and concerns with my partner.**

10. I get frustrated if romantic partners are not available when I need them.

11. I am nervous when partners get too close to me.

12. I worry that romantic partners won't care about me as much as I care about them.

Scoring Information:

Anxiety = 2, 4, 6, 8 (reverse), 10, 12

Avoidance = 1 (reverse), 3, 5 (reverse), 7, 9 (reverse), 11

Wei, M., Russell, D. W., Mallinckrodt, B., & Vogel, D. L. (2007). The experiences in Close Relationship Scale (ECR)-Short Form: Reliability, validity, and factor structure. *Journal of Personality Assessment*, 88, 187-204.

Appendix H – Copy of the Revised Conflict Tactics Scales.

The CTS2 follows in the form to be administered.**RELATIONSHIP BEHAVIORS**

No matter how well a couple gets along, there are times when they disagree, get annoyed with the other person, want different things from each other, or just have spats or fights because they are in a bad mood, are tired, or for some other reason. Couples also have many different ways of trying to settle their differences. This is a list of things that might happen when you have differences. Please circle how many times you did each of these things in the past year, and how many times your partner did them in the past year. If you or your partner did not do one of these things in the past year, but it happened before that, circle "7."

How often did this happen?

1 = Once in the past year	5 = 11-20 times in the past year
2 = Twice in the past year	6 = More than 20 times in the past year
3 = 3-5 times in the past year	7 = Not in the past year, but it did happen before
4 = 6-10 times in the past year	0 = This has never happened

1. I showed my partner I cared even though we disagreed.	1 2 3 4 5 6 7 0
2. My partner showed care for me even though we disagreed.	1 2 3 4 5 6 7 0
3. I explained my side of a disagreement to my partner.	1 2 3 4 5 6 7 0
4. My partner explained his or her side of a disagreement to me.	1 2 3 4 5 6 7 0
5. I insulted or swore at my partner.	1 2 3 4 5 6 7 0
6. My partner did this to me.	1 2 3 4 5 6 7 0
7. I threw something at my partner that could hurt.	1 2 3 4 5 6 7 0
8. My partner did this to me.	1 2 3 4 5 6 7 0
9. I twisted my partner's arm or hair.	1 2 3 4 5 6 7 0
10. My partner did this to me.	1 2 3 4 5 6 7 0
11. I had a sprain, bruise, or small cut because of a fight with my partner.	1 2 3 4 5 6 7 0
12. My partner had a sprain, bruise, or small cut because of a fight with me.	1 2 3 4 5 6 7 0
13. I showed respect for my partner's feelings about an issue.	1 2 3 4 5 6 7 0
14. My partner showed respect for my feelings about an issue.	1 2 3 4 5 6 7 0
15. I made my partner have sex without a condom.	1 2 3 4 5 6 7 0
16. My partner did this to me.	1 2 3 4 5 6 7 0
17. I pushed or shoved my partner.	1 2 3 4 5 6 7 0
18. My partner did this to me.	1 2 3 4 5 6 7 0
19. I used force (like hitting, holding down, or using a weapon) to make my partner have oral or anal sex.	1 2 3 4 5 6 7 0
20. My partner did this to me.	1 2 3 4 5 6 7 0
21. I used a knife or gun on my partner.	1 2 3 4 5 6 7 0
22. My partner did this to me.	1 2 3 4 5 6 7 0
23. I passed out from being hit on the head by my partner in a fight.	1 2 3 4 5 6 7 0
24. My partner passed out from being hit on the head in a fight with me.	1 2 3 4 5 6 7 0
25. I called my partner fat or ugly.	1 2 3 4 5 6 7 0
26. My partner called me fat or ugly.	1 2 3 4 5 6 7 0
27. I punched or hit my partner with something that could hurt.	1 2 3 4 5 6 7 0
28. My partner did this to me.	1 2 3 4 5 6 7 0
29. I destroyed something belonging to my partner.	1 2 3 4 5 6 7 0
30. My partner did this to me.	1 2 3 4 5 6 7 0
31. I went to a doctor because of a fight with my partner.	1 2 3 4 5 6 7 0
32. My partner went to a doctor because of a fight with me.	1 2 3 4 5 6 7 0
33. I choked my partner.	1 2 3 4 5 6 7 0
34. My partner did this to me.	1 2 3 4 5 6 7 0
35. I shouted or yelled at my partner.	1 2 3 4 5 6 7 0
36. My partner did this to me.	1 2 3 4 5 6 7 0
37. I slammed my partner against a wall.	1 2 3 4 5 6 7 0
38. My partner did this to me.	1 2 3 4 5 6 7 0
39. I said I was sure we could work out a problem.	1 2 3 4 5 6 7 0
40. My partner was sure we could work it out.	1 2 3 4 5 6 7 0
41. I needed to see a doctor because of a fight with my partner, but I didn't.	1 2 3 4 5 6 7 0
42. My partner needed to see a doctor because of a fight with me, but didn't.	1 2 3 4 5 6 7 0
43. I beat up my partner.	1 2 3 4 5 6 7 0
44. My partner did this to me.	1 2 3 4 5 6 7 0

(continued)

45. I grabbed my partner.	1 2 3 4 5 6 7 0
46. My partner did this to me.	1 2 3 4 5 6 7 0
47. I used force (like hitting, holding down, or using a weapon) to make my partner have sex.	1 2 3 4 5 6 7 0
48. My partner did this to me.	1 2 3 4 5 6 7 0
49. I stomped out of the room or house or yard during a disagreement.	1 2 3 4 5 6 7 0
50. My partner did this to me.	1 2 3 4 5 6 7 0
51. I insisted on sex when my partner did not want to (but did not use physical force).	1 2 3 4 5 6 7 0
52. My partner did this to me.	1 2 3 4 5 6 7 0
53. I slapped my partner.	1 2 3 4 5 6 7 0
54. My partner did this to me.	1 2 3 4 5 6 7 0
55. I had a broken bone from a fight with my partner.	1 2 3 4 5 6 7 0
56. My partner had a broken bone from a fight with me.	1 2 3 4 5 6 7 0
57. I used threats to make my partner have oral or anal sex.	1 2 3 4 5 6 7 0
58. My partner did this to me.	1 2 3 4 5 6 7 0
59. I suggested a compromise to a disagreement.	1 2 3 4 5 6 7 0
60. My partner did this to me.	1 2 3 4 5 6 7 0
61. I burned or scalded my partner on purpose.	1 2 3 4 5 6 7 0
62. My partner did this to me.	1 2 3 4 5 6 7 0
63. I insisted my partner have oral or anal sex (but did not use physical force).	1 2 3 4 5 6 7 0
64. My partner did this to me.	1 2 3 4 5 6 7 0
65. I accused my partner of being a lousy lover.	1 2 3 4 5 6 7 0
66. My partner accused me of this.	1 2 3 4 5 6 7 0
67. I did something to spite my partner.	1 2 3 4 5 6 7 0
68. My partner did this to me.	1 2 3 4 5 6 7 0
69. I threatened to hit or throw something at my partner.	1 2 3 4 5 6 7 0
70. My partner did this to me.	1 2 3 4 5 6 7 0
71. I felt physical pain that still hurt the next day because of a fight with my partner.	1 2 3 4 5 6 7 0
72. My partner still felt physical pain the next day because of a fight we had.	1 2 3 4 5 6 7 0
73. I kicked my partner.	1 2 3 4 5 6 7 0
74. My partner did this to me.	1 2 3 4 5 6 7 0
75. I used threats to make my partner have sex.	1 2 3 4 5 6 7 0
76. My partner did this to me.	1 2 3 4 5 6 7 0
77. I agreed to try a solution to a disagreement my partner suggested.	1 2 3 4 5 6 7 0
78. My partner agreed to try a solution I suggested.	1 2 3 4 5 6 7 0

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