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Cynyddu'r Defnydd o'r Gymraeg yn y Gweithle Dwyieithog: Mewnwelediadau o'r Gwyddorau Ymddygiad

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**Increasing Welsh Use in the Bilingual Workplace:
Insights from the Behavioural Sciences**

Arwel Tomos Williams

This thesis is submitted to the School of Psychology, Bangor University, in partial fulfilment
for the degree of Doctor of Philosophy

May 2021

Declaration

I hereby declare that this thesis is the results of my own investigations, except where otherwise stated. All other sources are acknowledged by bibliographic references. This work has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree unless, as agreed by the University, for approved dual awards.

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would be much worse without your invaluable contribution. I have learned so much about the process of translating and proof reading documents in Welsh, and for that, I am very grateful. And to everyone else at Canolfan Bedwyr for your contribution over the years, including language refurbishment and preparing for the Coleg Cymraeg Cenedlaethol's Language Skills Certificate, thank you very much to you all too!

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Mam a Dad – lle dw i'n dechrau? Mae'n anodd cyfleu pa mor ddiolchgar ydw i am eich cefnogaeth trwy gydol y daith hon a phob taith arall. Mae'r ffydd oedd gennych y byddwn yn cyrraedd pen y daith yn amhrisiadwy i mi – byddai wedi bod yn amhosibl cyflawni hyn heb i chi fod yno wrth fy ochr bob cam o'r ffordd. Wnaethoch chi ddim gadael imi roi'r ffidil yn y to, ac am hynny, dw i'n ddiolchgar iawn i chi.

Ac i bawb arall yn y teulu sydd wedi gwneud cyfraniad sylweddol mewn amryw o ffyrdd i fy helpu i gyrraedd y nod, diolch yn fawr iawn i bob un ohonoch chithau hefyd!

I Nain

Cofio'r sgwrs yn y siop? Wel, dw i 'di cyrraedd y nod, o'r diwedd.

Diolch am goelio fod gen i'r gallu.

Cariad mawr,

Arwel

Rhestr o Dermau ac Acronymau / Glossary and Acronyms

Term/acronym Saesneg / English term/acronym	Term/acronym Cymraeg / Welsh term/acronym	Diffiniad / Definition
Active choice model	Model dewis gweithredol	A standardised presentation method that requires users of a service to make an informed choice without much external influence
Baseline phase	Cyfnod gwaelodlin	A specific timeframe within a study where researchers collect data without having changed any variables in order to understand the ‘current’ behaviours of the sample. See also “Experimental phase”
Behavioural sciences	Gwyddorau ymddygiad	The umbrella term for the discipline of studying human behaviour
Behavioural spill over	Gorlif ymddygiad	A change in one’s behaviour ‘spilling over’ into another context/situation for the same person, or spills over and accordingly influences another person’s behaviour
Behaviour-change principle	Egwyddor newid ymddygiad	Principles that fall under the “Behavioural sciences” that outline methods of changing human behaviour

Term/acronym Saesneg / English term/acronym	Term/acronym Cymraeg / Welsh term/acronym	Diffiniad / Definition
Bilingual Dynamic Observational Tool (BiDOT)	Teclyn Arsyllwi Dwyieithrwydd (TAD)	A measure to collect the language choice behaviours of a sample of participants via observation
Bystander effect	Effaith y gwyllydydd	A phenomenon wherein people avoid taking responsibility for something due to assuming that someone else will take the responsibility
Chameleon effect	Effaith chameleon	The unintentional mirroring of someone else's behaviour
Code mixing	Cymysgu cod	Borrowing words from one language where the conversation is 'foundationally' conducted in another language
Code switching	Cyfnewid cod	Switching from one language to another within the same conversation

Term/acronym Saesneg / English term/acronym	Term/acronym Cymraeg / Welsh term/acronym	Diffiniad / Definition
Cold system	System oer	One of the two systems that make up the “Dual-process theory” (see also “Hot system”), the reflective cold system refers to the ‘more human’ psychological processing system that requires a lot of energy and effort for governing behaviour
Commit	Ymrwymo	A “Behaviour-change principle” that falls under “MINDSPACE” that stipulates the power that making a commitment to change a specific behaviour can have on the success of changing said behaviour
Control group	Grŵp rheolydd	A group of participants in an experimental study where their “Experimental phase” does not change from the “Baseline phase” with which researchers compare the data to the data of an “Experimental group”
Default choice model	Model dewis diofyn	A standardised presentation method of a service that chooses a choice on behalf of the user despite having multiple choices for the user

Term/acronym Saesneg / English term/acronym	Term/acronym Cymraeg / Welsh term/acronym	Diffiniad / Definition
Default setting	Gosod dewisiadau diofyn	A “Behaviour-change principle” that falls under “MINDSPACE” that stipulates the power that setting defaults can have on the success of changing specific behaviours
Descriptive norms	Normau disgrifiadol	Information that describes something that is normal in a certain society
Dual-process theory	Damcaniaeth proses ddeuol	A “Behavioural sciences” theory that states that human behaviour is governed by the victor of two psychological processing systems, i.e., the “Cold system” and the “Hot system”
Experimental condition/group	Grŵp arbrofol	A group of participants in an experimental study that go through environmental changes in concordance to the “Experimental phase” of the study
Experimental phase/ Study phase	Cyfnod arbrofol	The umbrella term for one of the phases of an experimental study, i.e., “Baseline phase”, “Intervention phase”, “Post-test phase”, “Follow-up phase”

<p>Term/acronym Saesneg / English term/acronym</p>	<p>Term/acronym Cymraeg / Welsh term/acronym</p>	<p>Diffiniad / Definition</p>
<p>Flexible linguistic context</p>	<p>Cyd-destun iaith hyblyg</p>	<p>A context where the intertwining of multiple languages and the changing from one language to another is not restricted</p>
<p>Follow-up phase</p>	<p>Cyfnod dilynol</p>	<p>A specific timeframe within a study where researchers collect data after completing the “Post-test phase” in order to understand the potentially longer-term effect of an “Intervention”. See also “Experimental phase”</p>
<p>Friction points</p>	<p>Pwyntiau ffrithiant</p>	<p>Variables that make it more difficult to execute certain behaviours</p>
<p>Hawthorne effect</p>	<p>Effaith Hawthorne</p>	<p>See “Participant reactivity”</p>
<p>Hot system</p>	<p>System boeth</p>	<p>One of the two systems that make up the “Dual-process theory” (see also “Cold system”), the reflexive hot system refers to the ‘more animalistic’ psychological processing system for governing behaviour that that is energy efficient and does not require much effort</p>

Term/acronym Saesneg / English term/acronym	Term/acronym Cymraeg / Welsh term/acronym	Diffiniad / Definition
Interlocutor	Cyd-siaradwr	One's conversation partner/target
Inter-observer agreement (IOA)	Cytundeb rhwng arsylwyr (IOA)	The rate at which data that are independently collected by the same means by more than one observer at the same time and in the same context agrees/overlaps
Intervention	Ymyriad / ymyrraeth	An element that is added to a population with the aim of influencing the behaviours of the members of the population
Intervention phase	Cyfnod ymyriad	A specific timeframe within a study where researchers collect data after completing the "Baseline phase" in order to explore potential behavioural changes within the sample. See also "Experimental phase"
Limited resource model	Model adnoddau cyfyngedig	A "Behavioural sciences" theory that represents one's self-control as a muscle that has finite energy

Term/acronym Saesneg / English term/acronym	Term/acronym Cymraeg / Welsh term/acronym	Diffiniad / Definition
Linguistic awkwardness	Lletchwithdod ieithyddol	An awkward situation created by an individual/group as a result of using an unknown language with someone
Linguistic courtesy	Cwrteisi ieithyddol	A situation where individuals/a group of people use a language amongst each other that is not their usual language choice in order to include others that do not understand the usual language of choice
Linguistic dynamic	Deinameg ieithyddol	The dynamic for a group of people in terms of the language(s) they tend to use to communicate
Linguistic regulation	Rheoleiddio ieithyddol	An agent that regulates the language in which individuals should communicate within a certain context
Linguistic snowball effect	Effaith pelen eira ieithyddol	A linguistic “Behavioural spill over” that repeats itself going from one person to another, and so on

<p>Term/acronym Saesneg / English term/acronym</p>	<p>Term/acronym Cymraeg / Welsh term/acronym</p>	<p>Diffiniad / Definition</p>
<p>Linguistic habit context (LHC)</p>	<p>Cyd-destun arferion iaith</p>	<p>The difficulty of changing from one established language to another within a particular context</p>
<p>MINDSPACE</p>	<p>MINDSPACE</p>	<p>A framework within the “Behavioural sciences” that outlines nine “Behaviour-change principles” as a guide for devising an “Intervention”: M, Messenger; I, Incentive; N, Norms; D, Default; S, Saliency; P, Prime; A, Affect; C, Commitment; E, Ego</p>
<p>Nudge</p>	<p>Nudge</p>	<p>A “Behavioural sciences” theory, Nudge theory refers to the way that the design of a choice architecture influences individuals to behave in a certain manner without stopping them from behaving in another manner</p>

Term/acronym Saesneg / English term/acronym	Term/acronym Cymraeg / Welsh term/acronym	Diffiniad / Definition
Participant reactivity	Adweithedd cyfranogwr	The phenomenon of individuals behaving differently to usual due to knowing that their behaviour is the topic of a research study
Passive speaker	Siaradwr goddefol	Individuals that have ample skills within a language, yet choose not to use those skills, e.g., a passive Welsh speaker can understand most of what others say in Welsh, though will not use Welsh themselves
Pluralistic ignorance	Anwybodaeth luosogaethol	See “Bystander effect”
Post-test phase	Cyfnod ôl-ymyriad	A specific timeframe within a study where researchers collect data after completing the “Intervention phase” in order to understand the potentially long-term effect of an “Intervention”. See also “Experimental phase”

Term/acronym Saesneg / English term/acronym	Term/acronym Cymraeg / Welsh term/acronym	Diffiniad / Definition
Randomised control trial (RCT)	Treialu hapsamplu rheolyddedig (RCT)	The gold standard in the “Behavioural sciences” whereby an experimental study randomly allocates a group of participants as the “Experimental condition/group” and another group as the “Control group”
Soziolinguistika Klusterra (SLK)	Soziolinguistika Klusterra (SLK)	A language research company based in Andoain, The Basque County (The Sociolinguistics Cluster)
Txillardegí's Mathematical Model	Model Mathemategol Txillardegí	A formula that allows one to calculate the odds of the ability of two or more people randomly selected from a specific population to speak a minority language
Value-action gap	Bwlch rhwng gwerthoedd a gweithredu	The difference between one’s attitude to something and the way in which one behaves with regards to it

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Nodyn i Ddarllenwyr / A Note to Readers

Mae fersiwn Gymraeg o'r thesis hwn ar gael: / A Welsh version of this thesis is available:

Cynyddu'r Defnydd o'r Gymraeg yn y Gweithle Dwyieithog:**Mewnwelediadau o'r Gwyddorau Ymddygiad**

O'r herwydd, mae'r toriadau tudalen mewn manau penodol trwy gydol y ddogfen yn fwriadol. Mae hyn yn eich galluogi i edrych ar y fersiwn Gymraeg a'r fersiwn Saesneg ochr yn ochr a sgrolio trwyddynt gyda'i gilydd. Mae hyn hefyd yn sicrhau eich bod wastad yn gweld yr adrannau sy'n cyfateb i'w gilydd ochr yn ochr. Saesneg yw iaith wreiddiol y thesis hwn oherwydd proffil a dewis iaith rhai o'r goruchwylwyr er mwyn darparu'r adborth gorau posib ar ddrafftiau.

Thus, page breaks in specific areas throughout this document are deliberate. This will allow you to look at the Welsh version and the English version side by side and scroll through them simultaneously. This also ensures that you see the corresponding sections side by side at all times. The original language of this thesis is English due to the linguistic make-up and preferences of some of the supervisors in order to provide the best feedback possible on drafts.

Thesis Overview

Chapter 1 serves as the general introduction to this thesis. Changing from one established language to another within a particular context appears to be challenging. The thesis throughout refers to this phenomenon as the linguistic habit context. This chapter introduces the role of the behavioural sciences and its potential to contribute to increasing the use of lesser-used languages, thus shifting to a more flexible linguistic context. Particularly, how the behavioural sciences can shift the perception that English is the dominant ‘language of work’ in Wales. One of the core themes of this chapter, and the thesis overall, focusses on the aims of the Cymraeg 2050 vision in terms of increasing the use of Welsh in the workplace. Clearly, the issue of changing language and operating a bilingual workplace is complex. Chapter 1 discusses some of these issues.

One of the main aims of Cymraeg 2050 is influencing spoken Welsh in the workplace. This is the focus of the empirical chapters within this thesis (Chapter 2, Chapter 3, and Chapter 4). In addition, the general introduction emphasises a gap in the literature, namely the lack of robust and systematic evaluations of the impact and effectiveness of language interventions on actual language use. These empirical chapters used mixed methods approaches, utilising a number of different methodological traditions in order to attempt to understand these complex issues.

Chapter 1 also discusses the widespread use of self-report methods typically used in this area, including their limitations, which bring the strength of previous research into question. A priority for this PhD was piloting and developing observations-based methods, which are more robust than self-reports, in order to inform knowledge regarding the impact and effectiveness of language change approaches and interventions more strongly.

Chapter 2 contains two studies. Study 1, Chapter 2 focussed on the development of the Bilingual Dynamic Observational Tool (BiDOT) in order to measure language choice behaviour directly via observations and gather data that are more robust on real-world language choice behaviours within bilingual settings. Study 1, Chapter 2 piloted the BiDOT by observing the language choice behaviours of a group of workers ($n=16$) in the natural workplace context. The results of Study 1, Chapter 2 demonstrated the BiDOT to be a practical measure for collecting language use data via direct, *in-situ* observations. As such, Study 2, Chapter 2 used the BiDOT to gather language use data during multiple study phases at a bilingual workplace in order to evaluate the potential impact of a Welsh language mentoring scheme on Welsh use. The results of Study 2, Chapter 2 suggested that the scheme increased the use of Welsh by the participants ($n=22$). This makes a significant contribution to bridging the current gap of implementing language-driven interventions without adequate evaluation of their impact on language choice behaviours. Overall, the two studies in Chapter 2 demonstrated that the BiDOT was a practical measure for quantifying language choice behaviours. Therefore, the BiDOT allowed the shift away from self-report methods to a more robust data collection method.

Chapter 3 took a qualitative approach to evaluating the potential impact of the Welsh language mentoring scheme on Welsh use by interviewing (semi-structured) participants of the scheme ($n=25$) in order to gather their perceptions of their experience of the scheme. Thematic analysis of the interview transcripts revealed three main themes; (1) changing language is difficult, (2) benefits of scheme, and (3) limitations of scheme. The data suggest that the participants were of the opinion that the scheme was effective in terms of increasing the use of Welsh at work. This is in concordance with the quantitative results of Study 2, Chapter 2. In addition, the data serves as advice in terms of what elements of the scheme were effective in this achievement, and suggest limitations of the scheme. As such, this data

can serve as a guide in terms of developing and strengthening the scheme for future implementation.

Chapter 4 shifted away from the Welsh language mentoring scheme paradigm of Chapter 2 (study 1 and study 2) and Chapter 3 (study 3) and piloted the ARFer programme (study 4). Integral to the ARFer programme are two behaviour-change principles, namely default setting and public commitment making. ARFer ‘enablers’ at the department ($n=5$) committed to use Welsh as the default language choice with their colleagues that could understand Welsh. The use of the BiL DOT for gathering language use data was integral to Study 4, Chapter 4 in order to evaluate the potential impact of the ARFer programme on Welsh use (as was the case in Study 2, Chapter 2). However, participants of ARFer ($n=22$) also completed a questionnaire on a weekly basis in order to self-report their own perceptions of the linguistic dynamic at the department. Thus, two datasets formed the results of Study 4, Chapter 4. Whilst there was inevitable disparity between both datasets, the observations results demonstrated that Welsh use more than doubled during the post-test phase in comparison to the baseline phase.

Chapter 5 serves as the general discussion for this thesis. It provides an overview of the thesis, including summarising the empirical chapters that make up its core (Chapter 2, Chapter 3, and Chapter 4). The general discussion also highlights some limitations of the empirical chapters, makes suggestions in terms of future research directions, and suggests some implications of this PhD journey. In addition, the general discussion includes a short reflection on the steps taken in order to minimise participant reactivity, and discusses researcher positionality from the point of view of the author.

Chapter 1: General Introduction

Complex language is a human-specific behavioural phenomenon (as far as current awareness dictates) and a unique feature/skill/ability that defines and separates the human species from all other known living beings. According to Pereltsvaig (2020), there are currently over 7,000 active languages in the world. A worldwide language of high power and status (Baker, 2009), the language with the most speakers and the dominant language in many countries is English (Abley, 2004). According to the Federal Union of European Nationalities (2014), the most widely spoken foreign language is and always will be English. Therefore, English is a threat to all minority languages in this diverse, multicultural and multilingual world. This is especially true for the Welsh language given that Wales and England share a geographical border.

The sociolinguistic state in Wales is and has been interesting for some decades. Wales has generally been under England's wing for the last seven centuries courtesy of The Acts of Union (Davies, 2014). An increased number and percentage of Wales' population have become English speakers since 1891 (see Figure 1), and English continues to hold the status as the majority language in Wales today given that 99% of Wales' population¹ can speak English fluently on at least a monolingual level (Office for National Statistics [ONS], 2013). Conversely, census statistics regarding the percentage of Wales' Welsh-speaking population generally demonstrates a degenerating trend since 1891² (see Figure 1: General Register Office, 1912; Swyddfa Cyfrif ac Adolygu'r Boblogaeth, 1994; Williams, 2013). The Welsh Language Board suggested that one of the most significant factors that led to this demise was the linguistic pressure from England (WLB, 1999). Whilst the absolute population number in

¹ Recorded as 3,065,500 people (Office for National Statistics [ONS], 2012).

² Official figures are unavailable prior to 1891. Wales' version of the 1891 census included a question on language for the first time (Higgs, 1996) in order to explore the sociolinguistic state of Wales, i.e., how many/what percentage of the population was monolingual Welsh, monolingual English, and Welsh-English bilingual.

Wales has steadily grown from 1891 to 2011, the percentage of Wales' Welsh-speaking population decreased from 54% in 1891³ to 19% by 2011⁴. The estimated number of Welsh speakers being lost annually range from 1,200 to 3,000 (Welsh Government [WG], 2012; Cymdeithas yr Iaith Gymraeg, 2013). However, the Welsh language has survived. The Welsh Government generally believes that the commitment of Welsh speaking communities is mostly responsible for the survival of the Welsh language alongside the world-renowned English language (WG, 2012).

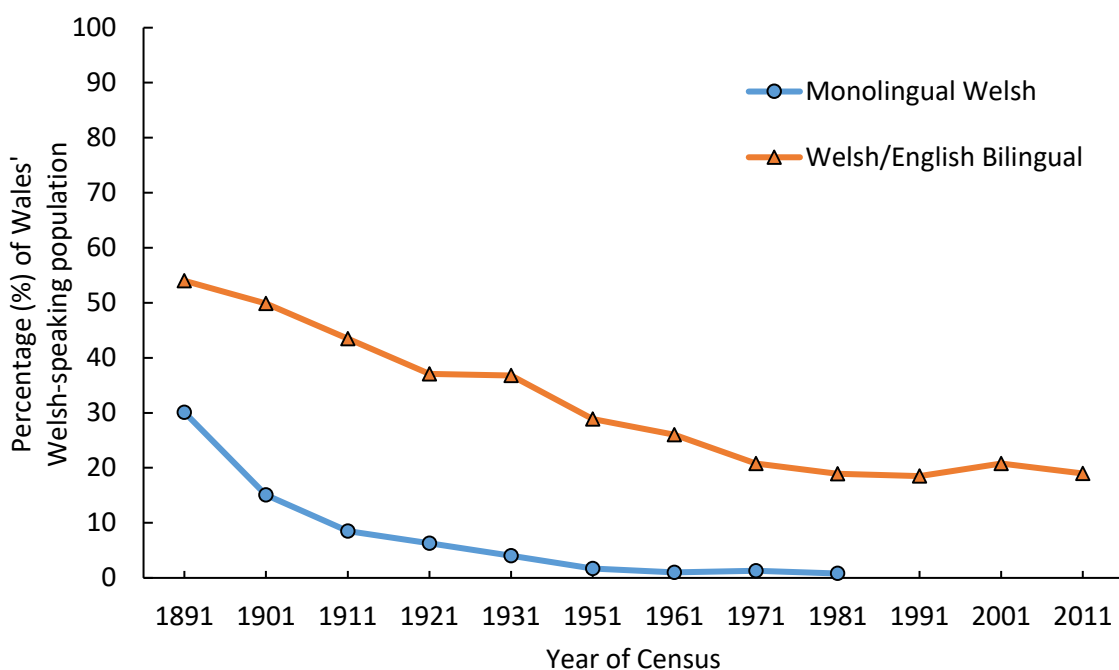


Figure 1. Census statistics illustrating the negative trend of the percentage (%) of Wales' population that could speak Welsh. There was no census in 1941.

³ The Registrar General suspected many of Wales' bilingual population had deceptively reported that they were monolingual Welsh due to their (assumed) tendency to use Welsh much more often than they used English (General Register Office, 1912, p. iii). Parry and Williams (1999) suggested that this was a deliberate act by Welsh language advocates in order to embrace the census as a platform to reflect a stronger monolingual Welsh population than reality (thus attempting to embrace the power of descriptive norms: for e.g., see Beggs, 2016; Gerber & Rogers, 2009).

⁴ The only proportional increase seen in the census statistics occurred in 2001, increasing to 20.8% from 18.5% in 1991. Williams (2008) suggested that this was due to the education system, where Welsh was a core subject in Welsh-medium schools and a foundational subject in other schools for pupils 7-16 year of age.

Despite fewer than 20% of Wales' population being able to speak Welsh, the Welsh Language (Wales) Measure, 2011 (National Assembly for Wales [NAW], 2014) makes Welsh the sole legally recognised official language that harbours *de jure* status within both Wales (Williams, 2013) and throughout the UK. The Measure legally requires Welsh be treated on an equal basis to English and requires provisions to be made in order to encourage and facilitate Welsh use. This suggests that the Welsh Government regard the threat to the existence of the Welsh language as a serious matter and are introducing policies with a legal basis in order to try to neutralise that threat. Conversely, English is not legally recognised as an official language in Wales (despite 99% of Wales' inhabitants being fluent in English on at least a monolingual level: ONS, 2013) nor throughout the UK. Therefore, English harbours *de facto* official status.

The Welsh language has traditionally held a social status as the oldest UK language, one of the oldest European languages and one of many minority languages in Europe (WLB, 1999). Baker (2009) and Davies (1993) suggest that many regard Welsh as a historical language that is the glue that holds Wales' culture, traditions, and communities together, as well as the people's sense of identity and a medium of communication. People throughout Wales consider the Welsh language an important and integral element of the Welsh identity (Baker, 2009). Polls generally suggest that most of Wales' inhabitants support and are committed to Welsh (WG, 2012), and Wales' inhabitants generally support the prevention of the extinction of the Welsh language. Ó Néill (2005) also posits that Welsh is the most *used* of all the Celtic languages. However, the decennial census statistics on the Welsh-speaking population in Wales (see Figure 1) do not reflect the battle for the survival of the Welsh language since the mid-20th century. There has been a strong and patriotic movement for Welsh to gain status and live rather than merely exist. That is, for Welsh to be something that

is active and vibrant/alive as opposed to something existing in the background as a political issue.

Census statistics from 1991 onwards that indicate the Welsh-speaking percentage of Wales' population essentially indicate the Welsh-English bilingual percentage. The language question in the census changed and as a result no longer concerned English ability. According to Deuchar (2005), this was due to the assumption that monolingual Welsh speakers ceased to exist. That the census no longer questions English ability testifies this assumption and echoes the naïve view that they [Welsh speakers] all speak English anyway (as Davies' title would suggest: Davies, 1994). This change in the census question might reflect the perceptions of those involved in developing, analysing and disseminating the census results that the Welsh language was slowly dying. Insofar as they could tell, monolingual Welsh speakers had already become extinct.

A plethora of interventions have been conducted to promote the Welsh language, starting in the 20th century (Baker, 2009), especially after the significant passing of the Welsh Courts Act, 1942 (Davies, 1993). This act gave everyone in Wales the right to use Welsh in court for legal matters (Williams, 2013). However, the threat of language death might become more plausible if the current sociolinguistic state of the Welsh language continues to follow its negative trend (as indicated by the results of the decennial censuses: see Figure 1). Conversely, a significant number of people (especially those raised as Welsh speakers) believe that their identity of being Welsh is intertwined with being a Welsh speaker and that the future of Wales goes hand in hand with the future of Welsh (Abley, 2004). Williams (2013) believes that the majority of the responsibility with respects to developing and revitalising minority languages rests on the shoulders of governments. In Wales, the Welsh language commissioner (WLC), a role created hand in hand with the passing of the Welsh

Language (Wales) Measure, 2011, is responsible for investigating different methods of increasing Welsh use (NAW, 2014).

Renowned sociolinguist and the face of advocating the survival of threatened languages, Joshua Fishman, conceptualised that one can place the level of threat to a language on an eight-step continuum. Fishman referred to this continuum as “The Graded Intergenerational Disruption Scale” (GIDS: Fishman, 1991). A minority/lesser-used language that fits Stage 8 would only have a small number of elderly persons able to speak it. A minority/lesser-used language that fits Stage 1, however, would be in use for official government business and for higher education purposes. One might be able to use the GIDS to identify where a language sits and, accordingly, take appropriate action in order to try to move the language under question along to the next stage of the continuum. Table 1 defines these steps (taken from Fishman, 1991, pp. 88-109) and offers examples in the Welsh context of what institutions and the like have done in order to try to ‘deal with’ each stage.

Table 1

Fishman’s (1991) GIDS stages with corresponding examples in the Welsh context

GIDS Stage	Examples in Wales
8: A small number of elderly persons able to speak Welsh	N/A
7: Those that can speak Welsh are exclusively older than child-bearing ages	N/A

GIDS Stage	Examples in Wales
<p>6: There is limited use of Welsh between one generation and the next, e.g., parents with their children</p>	<p>Work has been done to investigate the use of Welsh between family generations (see for e.g., Evas & Morris, 2017)</p>
<p>5: Welsh is used as a community language and is an active part of it as opposed to taking a back seat</p>	<p>Research in Wales has explored the use of Welsh in the community (see for e.g., Hodges, Prys, Orrell, Williams, & Williams, 2015). To improve upon the use of Welsh in the community, the Cymraeg 2050 strategy (WG, 2017a) has set out the social use of Welsh as one of the contexts in which the Welsh Government wishes to increase Welsh use</p>
<p>4: The use of Welsh in primary schools is a requirement</p>	<p>The Cymraeg 2050 strategy (WG, 2017a) refers to a vision of having “an educational system that provides Welsh language skills for all” (p. 7). The Welsh in education action plan for 2017-21 (WG, 2017b) aligned with this and stated that “Welsh was included in the national curriculum following the Education Reform Act 1988, and became a compulsory subject for all learners in Wales in Key Stages 1, 2 and 3 in 1990. From September 1999 onwards Welsh became compulsory for all learners across Wales at Key Stage 4. This will not change and, in future, increasing value will be placed on Welsh as a subject and as a medium for teaching and learning” (p. 16)</p>

GIDS Stage	Examples in Wales
<p>3: The use of Welsh in more professional settings, such as businesses and workplaces, is part of the norm</p>	<p>There is some research on the use of Welsh in workplace settings (see for e.g., WLB, 2006; BBC Cymru Wales, S4C, & WG, 2013; WG & WLC, 2015). In addition, due to the Welsh Language Act 1993 (Llywodraeth EM, 1993), the WLB required public bodies draft a Welsh language scheme to state the steps they were going to take in order to guarantee Welsh language service provision. The Cymraeg 2050 strategy also lists the workplace as one of the contexts in which the Welsh Government wishes to increase Welsh use</p>
<p>2: Welsh plays an active part in how local government, i.e., county councils, conducts their operations</p>	<p>Gwynedd Council, for example, has a language policy in place that essentially states that Welsh is the official language of the Council (Gwynedd Council, 2016)</p>
<p>1: Welsh is used for official government business and in higher education</p>	<p>The Welsh Government takes the Welsh language seriously and has policies in place that require all employees and representatives of the Welsh Government to treat Welsh and English on an equal basis. All of the Welsh Government’s front-facing/public material is bilingual. There is also a dedicated minister within the Welsh Government who has responsibility over the Welsh language and education; Welsh can be used as a language in many higher education institutions across Wales due to the creation of Y Coleg Cymraeg Cenedlaethol, which is funded by the Welsh Government</p>

Cymraeg 2050

In response to the deteriorating state of the Welsh language (see Figure 1), the Welsh Government's Cymraeg 2050 strategy (WG, 2017) outlines their actions to revitalise the Welsh language by achieving one million Welsh speakers in Wales by 2050⁵. This is an aspirational vision for Wales and the Welsh language. The Welsh Government has approximately 40 years to double (nearly) the current number of Welsh speakers in Wales by 2050 (as indicated by the 2011 census) or 33 years from publishing Cymraeg 2050 in 2017.

Alongside Cymraeg 2050's first theme of increasing the number of Welsh speakers to a million, its second theme aims to increase Welsh use. The broad decline in Welsh language use is an ever-growing societal problem. The fact that numerous interventions exist/have existed intent on tackling this issue support this. This includes (but is not limited to) *Iaith Pawb* (WAG, 2003), the Welsh Language (Wales) Measure, 2011 (which replaced the WLB with the WLC: NAW, 2014), *Iaith Fyw: Iaith Byw* (WG, 2012), and most recently Cymraeg 2050 (WG, 2017). Theme 2 of Cymraeg 2050 therefore represents a significant and ambitious step-change to increase the prevalence of spoken Welsh. Cymraeg 2050 targets three particular contexts for increasing Welsh use, (a) social settings, (b) delivery and use of services, and (c) workplaces. The workplace serves as the contextual focus for this thesis. The responsibility held by the WLC for investigating different methods of increasing Welsh use also holds relevance to the workplace context (WG, 2012).

⁵ This number is higher than the highest census number of 977,366 Welsh speakers in 1911 (Davies, 2014).

English Continues To Be the ‘Language of Work’

All public bodies in Wales were legally obligated to produce a Welsh language scheme, detailing how they would guarantee Welsh language service provision to service users, due to the Welsh Language Act 1993 (Llywodraeth EM, 1993). The Welsh language board, created as part of the Welsh Language Act 1993, was responsible for ensuring that public bodies drew up a Welsh language scheme. One of the most prominent interventions focussed on promoting Welsh use at work launched by the Welsh language board (and subsequently taken over by the WLC) is Iaith Gwaith (still in place at the time of writing). Iaith Gwaith uses the Cymraeg speech bubble to notify others that the wearer is a willing Welsh-speaking member of staff⁶. The Iaith Gwaith speech bubble is available as a badge or a lanyard to wear, or as a poster. Iaith Gwaith has two primary aims, (a) to encourage service users to use Welsh to access services, and (b) to encourage staff to use Welsh amongst each other.

Ivey and Chatfield (2007) evaluated the impact of Iaith Gwaith. One of the most distinct inclusions in their report was that wearing the badge had little behavioural impact on the use of Welsh by Welsh-speaking staff in order to discuss work matters. One of the reasons for this was their lack of confidence to use Welsh for such matters. This suggests that English continues to be the ‘language of work’. Therefore, hiring Welsh speakers does not necessarily mean that Welsh speakers will use Welsh in the workplace. Organisations continue to refer to their native Welsh-speaking staff’s lack of confidence to use Welsh, e.g., Ivey and Chatfield’s evaluation of Iaith Gwaith (2007), and to struggles that Welsh learners have in venturing beyond the classroom in order to practice and use their new Welsh skills in the real world. Along with the perception that professional people use English (WLB, 2003),

⁶ The cleachdi initiative in Scotland (launched in 2019) bears striking resemblance to Iaith Gwaith. However, cleachdi does not specifically focus on the workplace context (Bòrd na Gàidhlig, n.d.). This suggests that Bòrd na Gàidhlig at least sees potential in the Iaith Gwaith design as a tool to try to encourage the use of Gaelic.

lack of confidence is one of the leading factors that people use as an explanation of why they shy away from using Welsh in formal and professional contexts (WG, 2012). Lack of confidence to use Welsh might therefore encourage Welsh speakers to use English in formal/professional contexts.

In addition to Iaith Gwaith, many organisations have developed internal opportunities to support and encourage/facilitate Welsh use at work, e.g., Cymraeg yn y Gweithle, Pencampwyr Iaith Gymraeg, Paned Cymraeg, Siop Siarad, Cynllun Mentora Cymraeg, Cymorth Cymraeg electronic resources, etc., alongside translation services, specific workshops, classes, sabbatical courses and one-to-one tuition opportunities as well as language awareness training courses. However, organisations risk reaching a stalemate and becoming only *nominally bilingual* (i.e., front facing only) without effective evidence-based interventions designed to address linguistic habits. Arguably, even organisations that have a fully bilingual ‘framework’ (policies, strategies, documents, etc.) risk falling short of achieving *active bilingualism*, i.e., where Welsh is actively used in daily working practices internally as a norm in tandem with English rather than a predominantly English environment. This is why organisations and employees require support to shift their behaviours in order to use Welsh as a habitual and default norm. However, there is “a significant deficit in the empirical evidence in relation to the impact of individual programmes on increasing the use of Welsh. This makes it difficult to form an objective assessment of how effectively these have worked, either alone or together, and to evaluate appropriately the likely success of activity of this nature in the future” (WG, 2012, p. 11). The impact of individual programmes such as *Cyd* (abolished March 2008: *Cyd*, n.d.), *Siarad* (still in place at the time of writing: Learn Welsh, 2018), and language buddy projects in public sector workplaces such as local authorities is virtually non-existent. Discovering evidence-based methods to increase Welsh use at work would therefore be a giant and significant leap towards bridging the gap between implementing ideas such as the examples listed above and evaluating their efficacy. It is imperative to collect data in order to assess whether positive outcomes arise due to implementing ideas. This could make a significant

contribution and could help guide policy planning and procedures in order to develop and maintain actively bilingual workplaces.

Linguistic Data

Due to their convenience (Cooper, Heron, & Heward, 2014; Miltenberger, 2008), one of the most common methods for collecting data within the behavioural sciences is participant interviews and surveys/questionnaires (Gravetter & Forzano, 2009). Data and information gathered via these indirect methods rely on respondents self-reporting their own interpretation of the concept under study. Self-report methods harbour many strengths. For example, given the presumption that one is more aware of oneself as compared to any other agents (Gravetter & Forzano, 2009), self-reports can reveal detailed information about each respondent. Self-report methods are also easy to conduct, are time-efficient⁷ (Miltenberger, 2008) and flexible⁸. Self-report methods are therefore an efficient means to collect large amounts of data (Gravetter & Forzano, 2009; Shaffer & Kipp, 2010) in a relatively short timeframe.

⁷ As compared to direct observations, wherein researchers must wait for the behaviour(s) of interest to occur naturally within their observed sample.

⁸ For example, self-report methods are flexible in terms of their length/duration, medium (e.g., online, in person, written or verbal), and researchers can utilise them in order to explore almost any topic.

Multilingual research often utilise self-reports in order to collect linguistic data (Altuna & Urla, 2013; Zhuravleva, de Bot, & Hilton, 2016). For example, Gruffudd and Morris (2012) distributed a questionnaire to Welsh learners. One of the main findings in terms of the use of Welsh by the participants was that approximately 25% of the sample self-reported that they used Welsh every day and “another half uses Welsh ‘many times’ a week” (p. 30). Given that the participants were Welsh learners, these values are encouraging. However, the actual language behaviour of the participants remains vague. That is, it is unclear how often per day they use Welsh. In addition, ‘many times’ a week does not have a set minimum nor a maximum number of times to use Welsh per week for it to be counted as ‘many’, or indeed a category that would denote that Welsh use was lower or a category that denotes Welsh use to be higher. Therefore, the percentage of time in which the participants used Welsh outside of their formal learning environment did not emerge from the results based on the Likert scale that the participants used to self-report their use of Welsh.

Twenty-six percent of the participants of a questionnaire-based study by NOP Social and Political (1996) self-reported that they use Welsh at work almost all the time, 20% of the participants self-reported that they used Welsh at work sometimes, and 16% of the participants self-reported that they did not use Welsh at work (37% of the participants were not employed). The percentages of 26% and 20% are not adequately detailed to suggest how much of their conversations at work were through the medium of Welsh in reality. Thomas (2011) also used a Likert scale from 'always' to 'never' for participants to note how often they used Welsh in order to access services in both the public sector and the private sector. See also Thomas and Roberts (2011) for a Likert scale ranging from 'English almost always' to 'Welsh almost always' to explore the use of Welsh by pupils in school settings.

The issue of self-report studies providing vague results in terms of how often participants use a language is commonplace. Kingsley (2013), for example, explored the variety of languages that bank workers in Luxembourg used in different working contexts (writing reports and emails, presenting and attending meetings, using the phone, and informal chatter). Whilst English clearly dominated as the most prevalent language across the working contexts, participants did use other languages based on their nationality and indeed the nationality of their 'audience'. What is not clear in the results of this study, however, is the ratio of the use of each language per working context, e.g., no information is available on whether German national employees of the bank used English more often than German (or vice versa) when emailing; only that they do use both languages.

In order to understand the actual use of a language, researchers should collect data that are more detailed. Bourhis and Sachdev (1984), for example, asked Italian Canadians and English Canadians in Hamilton, Canada, to self-report the percentage of time in which they used Italian and English in nine different sociolinguistic contexts (including the workplace). For example, English Canadians self-reported that they used English around 99-100% of the time at work, and used Italian for around 0-1% of the time at work. Italian Canadians self-reported that they used English around 78% of the time at work, and used Italian for around 26% of the time at work. The results demonstrated that these two populations had differing perceptions of the use of these languages based on whether Italian or English was the majority language in their community. This suggests that the linguistic landscape can bias one's opinion of their own language use in the direction of a specific language. That said, this study by Bourhis and Sachdev was one of the earliest (1984: see also Taylor, Simard, & Papineau, 1978) to use a continuous scale in the form of percentages to collect data that were more detailed on self-reported language use as opposed to asking participants to pick a time-based category, e.g., daily, weekly, etc., and/or frequency-based category, e.g., always, usually, etc. (which provides vague data)⁹.

⁹ For more examples of self-report studies on language use, see Aberystwyth University, 2016; Cunliffe, Morris and Prys, 2013; Jauregi and Superbiola, 2015; McLeod, O'Rourke and Dunmore, 2014; Moriarty, 2010; Superbiola, 2016; Vivian, Winterbotham, Gunstone and Hewitt, 2014; WLB, 2003; WLB, 2008; Y Swyddfa Gymreig, 1992.

Since the turn of the millennium, three prominent large-scale self-report studies collected data on the active use of Welsh, which included a focus on Welsh use at work. Respondents of the 2004 Welsh Language Use Survey (WLB, 2006) estimated their use of Welsh in the workplace with their colleagues. They chose one option from a triad of pre-determined written response choices (mostly Welsh, some Welsh, no Welsh) in order to represent their language behaviour when (a) the majority of their colleagues were Welsh speakers, and (b) when some of their colleagues were Welsh speakers. For example, 77.3% of the respondents reported that they spoke mostly Welsh with their colleagues if the majority of their colleagues could speak Welsh. However, English tended to dominate the medium of communication when discussing actual work. This supports the notion that English is the language of work. BBC Cymru Wales, S4C and WG (2013) researchers asked their interviewees to choose one option from a quartet of pre-determined choices in order to indicate how often they used Welsh at work (always, usually, sometimes, never). For example, 38% of the respondents (regardless of fluency level) indicated that they always or usually spoke Welsh. WG and WLC (2015) implemented adapted versions of the Welsh Language Board's questionnaire (WLB, 2006): 81% of respondents indicated that they sometimes spoke Welsh at work and 35% of fluent Welsh respondents indicated that they always used Welsh with their colleagues.

Self-Report Limitations

Based on the limited nature of the questions within these three large-scale studies, responses were vague and different readers might interpret responses differently to each other (Baker, 2006). For example, that 81% of WG and WLC's respondents indicated that they sometimes spoke Welsh at work (2015) does not suggest how much Welsh that they actively and actually used at work. This value does not indicate what percentage of the respondents' conversations were through the medium of Welsh, only that 81% of the respondents reported that they sometimes spoke Welsh at work. "Sometimes" is a vague term. Consequently, readers interpret the results at their own discretion. Some readers might interpret that 81% of the respondents used Welsh at work for around half of their conversations, whereas other readers might interpret that those same respondents used Welsh at work for around a quarter of their conversations. Neither of these conclusions would necessarily be wrong because verification of individual interpretation is virtually impossible. Despite 35% of WG and WLC's fluent Welsh respondents indicating that they always used Welsh with their colleagues (2015), one might not necessarily interpret this to mean that these 35% of respondents used Welsh 100% of the time to converse with their colleagues.

The respondents of these three studies selected from a pre-determined set of restricted response choices in order to reflect their self-perception of their own generalised language behaviour as accurately as possible. Therefore, not only could different readers interpret the results differently to each other, different respondents might also interpret the questions and their respective response choices differently to each other. For example, one respondent that says “bore da” to a colleague every working morning, while using English throughout the rest of the working time with the same colleague, might interpret “sometimes” to be an appropriate response¹⁰ for this particular linguistic habit. However, respondents that behaved identically might pick a different choice to “sometimes”¹¹ due to their own individual interpretation that choosing “sometimes” would be an inappropriate response for this particular linguistic habit.

¹⁰ Categorically, this is correct. Realistically, it is not correct.

¹¹ Realistically, this is correct. Categorically, it is not correct.

One might argue that the clear inherent issues with self-report procedures outweigh their benefits. Self-reports are a subjective estimate based on respondents' *perceived memory* of past events or behaviours (Miltenberger, 2008), which is based on what they are *able* to recollect (Cooper et al., 2014). This can be misleading due to individual bias and inability to recollect accurately (Miltenberger, 2008). A variety of variables can distort respondents' memories (Elmes, Kantowitz, & Roediger III, 2003; Field, 2009) and it is plausible that they were not paying attention to the behaviour of interest. As a result, respondents do not have enough information in order to assess their past engagement with the behaviour of interest. Respondents subsequently provide misrepresentative descriptions of their engagement with the behaviour of interest. Therefore, the argument in favour of self-report methods, i.e., that one is presumably more aware of oneself as compared to any other agents (Gravetter & Forzano, 2009), is based on the assumption that one is appropriately informed about oneself in order to adequately describe oneself (Gleitman, Gross, & Reisberg, 2011). Motivated forgetting can also occur, i.e., one might recreate and distort one's memories in order to match one's beliefs (Elmes et al., 2003). Therefore, the quality and accuracy of respondents' memory might not be sufficient in order to satisfy the requirements of presented questions. These limitations call the reliability and the validity of self-report information into question. Therefore, self-reports cannot be exclusively trusted given that they do not objectively collect real time quantitative data. Thus, self-report data might not concretely represent what actually happened in terms of the respondents' behaviour.

Self-reports are assumed to be less reliable due to the subjective and retrospective nature of data collection (Dunning, Heath, & Suls, 2004; Zhuravleva et al., 2016; see also Altuna & Urla, 2013; Bourhis & Sachdev, 1984). Questions often come hand in hand with limited response choices (which can be vague): the responses available to the respondents of the three studies on Welsh use at work support this (BBC Cymru Wales et al., 2013; WG & WLC, 2015; WLB, 2006). This can cause misinterpretation (Baker, 2006) and thus difficulties for respondents with respects to picking and choosing which available response choice is the most representative of what they believe to be the truth (Gravetter & Forzano, 2009). If respondents do not deem any response choice as appropriate, they are regardless under pressure to choose a response (Dunham, 1988) that might not reflect their true perception of their behaviours. In this situation, some respondents might not endeavour to respond as accurately as possible and might start responding randomly or by following a pattern (Elmes et al., 2003). Arguably, this dishonest way of responding introduces a further issue as regards the accuracy and therefore the validity of self-report responses. Additionally, participants might not be able to respond accurately enough to items on questionnaires and therefore cannot provide valuable information (Hewitt & Kramer, 2011). Respondents might not provide a response in this case, and missing data is an issue for researchers.

Respondents also tend to provide dishonest (Shaffer & Kipp, 2010) or fake responses. As such, the quality level of a study that exclusively adopts a self-report data collection procedure can suffer due to the respondents deliberately providing dishonest information. For example, respondents might inflate the effects of interventions and steer their responses in order to make themselves look better (Gravetter & Forzano, 2009). Interviewer bias can also cause respondents to try to delight the researchers by giving the researchers what they assume the researchers want (this would be especially true when the researcher(s) is/are physically present during responding). Respondents might also provide answers they deem to be more consistent with their perceived societal and researcher expectations (Elmes et al., 2003), i.e., respond in a way that they believe others would respond in order to conform to their perception of the norm. The immediate context and the respondents' perception of what they know about the research topic can also steer their responses away from the best representation of the truth (Baker, 2006). In addition, respondents might steer their responses in the direction in which they *want* the results to go, e.g., to correspond to their own beliefs and/or views. This aligns with what the Registrar General suspected was the case in the 1891 census in Wales, i.e., that respondents had deceptively reported that they were monolingual Welsh (General Register Office, 1912, p. iii) in order to make the health state of the Welsh language look better (as suggested by Parry & Williams, 1999).

Language Use as a Behaviour

Although literature on behaviour change in terms of language choice is scarce, the census data for Wales between 1891 and 1981 provide a glimpse of Welsh use behaviour given that respondents could indicate that they were monolingual Welsh. This suggests that these individuals used Welsh for 100% of their conversations (see Figure 1). For example, at least 15.1% of Wales' population used Welsh 100% of the time according to the results of the 1901 census. This decreased to 0.8% by 1981. Census statistics do provide a thorough representation of the sociolinguistic state of the Welsh language given that most people aged three years and over contribute to its tabulation. Therefore, they do hold value. However, the 1991 census and censuses beyond cannot hint at the use of Welsh by the Welsh population given the removal of the option to indicate ability in the English language. At the time of writing, the ONS had not yet published the 2021 census results. However, the ONS' Annual Population Survey (APS) provides the most recent statistics on the state of the Welsh language in Wales. The latest APS revealed that 872,200 people (28.8% of Wales' population) aged three and over could speak Welsh (WG, 2021). However, "the APS results should not be compared with Census results"¹².

¹² This could be down to the difference in sample recruitment size (as many of the population of Wales for the census vs. approximately 320,000 people for the APS).

It is imperative to explore *actual* language behaviour in order to understand the vibrancy of the Welsh language. In addition to the three large-scale self-report studies previously discussed (WLB, 2006; BBC Cymru Wales, S4C, & WG, 2013; WG & WLC, 2015), the annual National Survey for Wales (NSW) has included a section on the Welsh language since its first run in 2012-2013 (WG, 2018) that has explored Welsh use in relation to Welsh ability. The NSW asks respondents whether they use Welsh daily, weekly, less often, or never. Table 2 summarises the results up until 2018, focusing on the percentage of the respondents ages 16 and over (a sample of 12,000 per year: WG, 2020) that could speak Welsh and how much they used Welsh on a daily basis.

Table 2

The NSW results on the percentage of participants ages 16 and over that could speak Welsh and used Welsh daily

Year of Survey	Welsh Ability/Use	
	Able to Speak Welsh	Use Welsh Daily
2012-2013	24%	11%
2013-2014	20%	10%
2014-2015	20%	11%
2015-2016*	-	-
2016-2017	20%	12%
2017-2018	19%	12%

Note. * = There was no survey.

The values in Table 2 suggest that language competence does not indicate language use¹³.

Therefore, the 19% statistic (that represents the whole of Wales) might not reflect the actual use of Welsh¹⁴.

Probability and ‘Isotropic’ (expected) use of a minority language.

Txillardegi’s Mathematical Model (Alvarez Enparantza, 2001: as cited in Martínez de Luna, Isasi, & Altuna, 2006)¹⁵ predicts the maximum probability that random members of a population *could* use a minority language to communicate (although this does not necessarily mean that they *would* use the minority language to communicate). Txillardegi’s Mathematical Model multiplies the percentage of a population that is able to speak a language with itself n times (n = the number of interlocutors) and divides the answer by 100. Therefore, in its simplest form to predict this probability for Welsh, the maximum probability that any two randomly chosen people in the whole of Wales (based on the 19% statistic) *could* speak Welsh to each other would be as follows: $19^2 = 361$; $361 / 100 = 3.61$ (see Martínez de Luna et al., 2006, p. 80). The maximum probability decreases when more interlocutors are part of the equation (0.69% for three randomly chosen people, 0.13% for four randomly chosen people, and so on).

¹³ The report on the 1961 census results made this point (General Register Office, 1962).

¹⁴ Whilst at least 99% of Wales’ official population can speak English (ONS, 2013), logic dictates that English is not used 99% of the time because there are active Welsh speakers and active speakers of other languages in Wales.

¹⁵ The work by Martínez de Luna et al. (2006) is one chapter of Azurmendi and Martínez de Luna (2006). Researchers at Soziolinguistika Klusterra (SLK: Andoain, The Basque Country) gave a copy of this to the author during a research visit in January 2017 in order to learn more about The Aldahitz project. To foreshadow a point in Study 4, Chapter 4, the Aldahitz project was the original inspiration for the ARFer programme, i.e., the methodology of Study 4, Chapter 4. The research team learned about Aldahitz during a presentation by the same SLK researchers in an international symposium in December 2015.

Txillardegi's Mathematical Model goes beyond its simplest form of predicting the maximum probability that inhabitants of a community/population have skills in a minority language as summarised above. It is also able to predict the isotropic, or expected, use of a minority language. The equation for this is as follows (as described in Altuna & Basurto, 2013, pp. 87-88, though changed here for the Welsh language context):

$$I_c = L_c * (W_n * B_n^2 + W_n * B_n^2 + W_n * B_n^2 \dots)$$

where:

- I_c = the Isotropic/expected use of Welsh (c = Welsh language/Cymraeg);
- L_c = the 'Loyalty' level of Welsh speakers to using Welsh (c = Welsh language/Cymraeg);
- W_n = the Weight of the group (n = number of interlocutors involved), and;
- B_n = the proportion of the population that is Bilingual (in Welsh and English; n = number of interlocutors involved).

However, this model of isotropic use assumes that all Welsh speakers are fully loyal to Welsh, i.e., they would use Welsh 100% of the time with other Welsh speakers. In order to counter this, one must know how loyal the individuals of the community/population are to the Welsh language, i.e., what percentage of time do they use Welsh when Welsh is an option, i.e., when their interlocutor(s) is/are also (a) Welsh speaker(s). Assuming that all Welsh speakers in Wales (19%) were 100% loyal to the Welsh language, one could calculate the isotropic/expected use of Welsh with the following formula:

$$I_c = 1 * (W_n * 0.19^2 + W_n * 0.19^2 + W_n * 0.19^2 \dots) (* 100 \text{ in order to get a percentage}).$$

However, it is not clear from the description by Altuna and Basurto (2013) from where one would get their 'Weight of the group' nor what exactly this is. Their example (p. 88) indicated 0.6 as their first weight of group, 0.22 as their second weight of group, and 0.18 as their third weight of group. They also denote that the bilingual proportion is 26.9% and that they base this on official governmental records. However, they fail to inform the reader from where they got their values of 0.6, 0.22, and 0.18. As such, using this model to calculate the isotropic/expected use of Welsh for Welsh speakers in Wales is not possible at the time of writing given the lack of understanding of this formula. All other works known to the author regarding the Welsh language that mention Txillardegí (WLB, 2006; Jones, 2008; Jones, 2012; Thurston, Greenall, & Sarasin, 2012) only briefly mention Txillardegí; a description and discussion of the models/formulae did not form part of these works. It therefore seems that there is a general lack of understanding of Txillardegí's work in Wales (most likely due to the language barrier). The author believes that this lack of understanding needs to be addressed.

Despite the appearance of a lack of understanding of Txillardegí's Mathematical Model in Wales, the probability element of Txillardegí's Mathematical Model does support the notion that language competence does not indicate language use. However, increasing the opportunities to use lesser-used languages does not necessarily guarantee a behavioural change in terms of engaging with those languages (Williams, 2013). Therefore, one's awareness that an interlocutor can speak Welsh might not necessarily mean that one will use Welsh in order to communicate with one's interlocutor. Realising the Cymraeg 2050 goal of achieving a million Welsh speakers in Wales would therefore not necessarily place the Welsh language in a healthier position. That is, achieving a million Welsh speakers would not necessarily guarantee an increased use of Welsh. The same applies vice versa, i.e., increasing Welsh use would not necessarily mean that the number of Welsh speakers would increase. It

is therefore of utmost importance to explore the potential effects of interventions intent on encouraging Welsh use. Two of the four studies included as part of this thesis took the first steps to bridge this gap (see Study 2, Chapter 2 and Study 4, Chapter 4).

The Linguistic Habit Context (LHC)

Changing from one language to another language within a bilingual context appears to be difficult when one language has been *set* as the habitual norm (Altuna & Urla, 2013; Evas & Morris, 2017; Jauregi & Superbiola, 2015; Jones & Morris, 2007; Thomas & Roberts, 2011). This thesis refers to this linguistic norm as the *Linguistic Habit Context* (LHC). The LHC represents the established linguistic habits of dyads as the behavioural norm within certain contexts. The LHC effect is often particularly robust: it can be difficult to shift and the context can become ‘inflexible’ to linguistic behaviour change once a group has established a strong linguistic norm or habit. Linguistic habits often relate to patterns set on initial meetings (Jones & Morris, 2007; Pujolar & Puigdevall, 2015) or by the linguistic norms of the specific context in which people typically interact, e.g., social context, the workplace, at school. The LHC effect certainly harbours relevance to the Welsh milieu.

The pattern of predominant English use commonly arises due to habit formation. From a psychological/human behaviour perspective, as with any habit that nestles deeply within the human psyche, breaking the habit of using English with people and subsequently replacing it with using Welsh with those same people is not as easy as it sounds. The research community has generally underestimated the difficulty of this task and has largely neglected it due to a general focus on producing more (new) Welsh speakers, along with a lack of focus on changing language behaviour amongst current Welsh speakers (e.g., passive speakers¹⁶) in order to increase Welsh use. This is of vital importance to this important research domain and this thesis aimed to break that neglect. *Old habits die hard*: it is not a matter of ‘switching off’ the English and subsequently ‘switching on’ the Welsh. People that have established English as a linguistic habit within their working relationships or within the workplace context can interfere with Welsh learners that make good progress. However, learners might find it difficult to switch from an all-familiar language to a new less familiar language with their peers despite making marked effort and aspiring to learn. Therefore, *using* their new language skills is limited. The same can be true vice versa: fluent and confident Welsh speakers might find it difficult to switch from English to Welsh with their Welsh learning peers due to having gotten used to using English with them. This might be especially true if they perceive their learner peers struggling to use or understand Welsh. Therefore, learners that do endeavour to speak Welsh with their colleagues might not receive adequate Welsh responses (which would not reinforce their learning efforts and might discourage them from using Welsh thereafter). Something extra is required in order to switch a language that has been set as a habitual and default norm.

¹⁶ A passive Welsh speaker refers to those that *can* use Welsh but generally *do not* use Welsh behaviourally (regardless of their attitude towards Welsh). Passive speaker may also refer to those that lack production skills of a language, but can comprehend the language. For example, those that claim, “I can understand it but I can’t speak it”. See van der Worp et al. (2017) for an e.g., in the Basque context.

Misell (2000) and Thomas (1986) suggested that the predominance of English in both Wales' linguistic landscape and linguistic soundscape (i.e., both visually and aurally) reminds and unintentionally clarifies to Wales' inhabitants that English is the norm and majority language in Wales. A predominantly English soundscape/landscape might significantly influence linguistic habits. The general population's tendency to sway towards English (see for e.g., Jones, 2014) might be a response to what they are environmentally *used to*, i.e., the constant English stimulation and an inconsistency in terms of a Welsh equivalent, e.g., on signs. That is, the predominance of English might serve to perpetuate English use.

Individuals that highly value the Welsh language can also become behaviourally ‘trapped’ in a habit loop of speaking English with other Welsh speakers and/or Welsh learners. This reflects a difference between how people feel or think about something and their behaviour towards it. People’s behaviour do not always reflect their values: Kollmuss and Agyeman (2002) refers to this as the attitude-behaviour gap or notoriously as the *value-action gap* (see for e.g., Blake, 1999)¹⁷. For example, most Welsh speakers are generally proud of that very fact (which would be their value: WG, 2012). However, despite appropriate provisions being made available for accessing services through either English or Welsh (especially in the public domain), English tends to continue to generally be the most likely linguistic choice even amongst Welsh speakers: some contexts seem to prime (be that with or without awareness) English use over Welsh use (which would be their action: Jones, 2014). This also appears in the field of language transmission within families. For example, Evas and Morris (2017) found a weak correlation between parental attitude towards Welsh and their use of the Welsh language in order to transmit Welsh to their children. This conflict forms a value-action gap for people that are proud of their Welsh abilities, yet their actions seldom reflect this value. This would be the case even among Welsh language advocates. However, this behaviour more likely reflects the difficulty of shifting linguistic habits as opposed to reflecting people’s attitudes. This is because shifting the LHC towards Welsh is no easy task when English has already nested and is hot system-driven.

¹⁷ This notion is popular in the world of pro-environmental behaviour (Kollmuss & Agyeman, 2002). That is, people might believe that pro-environmental behaviour is important. However, their own behaviour does not reflect this value. This is also the case for smokers that do not like and/or disagree with smoking.

Behaviour Change

Daniels (2001, p. 12) broadly defines behaviour as “anything that a person does”. This includes one’s actions, thoughts, and importantly for the focus of this thesis, the language that one chooses to use. However, the dual-process theory states that the victor of two conflicting physio/psychological systems (Metcalf & Mischel, 1999) plays the biggest part in influencing human behaviour (Thaler & Sunstein, 2008). The *hot system* is reflexive and efficient, while the *cold system* is reflective and effortful¹⁸.

The cold system is the most ‘human’: it has the most self-control responsibility. However, it requires effortful processing and as such depletes energy. The hot system is less ‘human’ and is more animalistic: it is akin to behaving instinctively. Of the two systems, the impulsive and stimulus-controlled hot system accordingly seems to have the biggest influence on behaviour (Metcalf & Mischel, 1999) given that it is efficient and as such is not as energy depleting as compared to the cold system. This is supported by the limited resource model (Muraven & Baumeister, 2002), which stipulates that behavioural self-control represents a muscle with finite energy. The muscle’s energy quickly depletes if the cold system controls behaviour. Conversely, the hot system would not deplete the muscle’s energy.

¹⁸ Whilst this thesis distinguishes these systems as hot and cold, others have coined different labels, e.g., automatic and deliberative (Sunstein, 2015), affective/implicit/procedural and cognitive/explicit/declarative (Corr & Plagnol, 2019), conscious and adaptive unconscious (Gladwell, 2005), emotional and rational (Heath & Heath, 2011), & more-commonly as system 1 and system 2 within behavioural economics (where system 1 is ‘fast’ and system 2 is ‘slow’: Kahneman, 2011).

Thaler and Sunstein (2008, p. 20) provides a very relevant example given the focus of this thesis, “people speak their native languages using their Automatic Systems and tend to struggle to speak another language using their Reflective Systems”. In this context, one might classify the automatic use of Welsh as a *habit* or a case of ‘practice makes permanent’ as driven and maintained by the hot system rather than the cold system. That is, individuals that claim they ‘*just use Welsh*’ has had to engage their cold system repetitively to *control* their language choice behaviour in order to use Welsh. Doing this is effortful (especially for simultaneous bilinguals¹⁹) yet necessary in order to *habituate* Welsh use and establish that behaviour as being subsequently hot system-driven and maintained. Welsh use occurs automatically when the hot system drives language choice behaviour, given that the hot system is naturally impulsive and energy-efficient, i.e., it just happens (the same applies for people that claim that they ‘*just use English*’). Therefore, the use of Welsh or English is not the result of consciously weighing and measuring these two linguistic options and subsequently picking one language over the other. Rather, it is to an extent an automatic response to the immediate context. When the hot system governs Welsh use, the practice of using Welsh *becomes* a habit. Repeated practice can also develop and strengthen fluency and confidence to use the language.

¹⁹ People raised in a generally bilingual context rather than raised in monolingual conditions where they learn another language later in life (late bilinguals).

It is crucial that Welsh speakers use Welsh if the target of achieving one million Welsh speakers in Wales by 2050 (WG, 2017) is to be of value. Achieving a million Welsh speakers is invaluable unless the vitality of Welsh simultaneously strengthens i.e., how much Welsh is actively used and how many people use the Welsh channels of bilingual service provisions. This is the only means of creating a vibrant Welsh language context where more people use Welsh in order to access services and that Welsh becomes a more frequently hot system-driven default option, which subsequently becomes the norm linguistic choice for a broader range of circumstances, e.g., at work, at home, on self-service tills, and so on. However, given how entrenched linguistic habits can become and how difficult a step changing linguistic habits is to overcome due to the LHC effect, Welsh speakers and learners alike (who have become accustomed to using English) need support to shift their linguistic behaviour in order to use Welsh as a habitual and default norm. As Williams (2013, p.149) put it, “it is not enough to set targets and to think and to hope that as a result of doing so everything will fall into place. In order to reach these new targets, new and creative ways must be sought to increase language skills, confidence and *usage* [emphasis added]”. This is where insights from the behavioural sciences can contribute. The whole science of human behaviour is relevant when attempting to shift contexts in order to encourage one form of behaviour over another, e.g., importantly for the present discussion and for the purpose of this thesis, speaking one language over another language in a bilingual context. For an example of the use of the behavioural sciences in the context of Prudent Healthcare in Wales, see Heather, O’Neill, Hughes and Parkinson (2016).

Policy makers took a traditional economic approach to policy and provision until approximately a decade ago (Hough, 2013; Thaler & Sunstein, 2008). Integral to the conventional economic paradigm is the notion that people are rational decision-makers, i.e., irrational decisions and behaviours only occur when people lack sufficient knowledge or choices (Lipsey & Chrystal, 2003; Thaler & Sunstein, 2008). Interventions derived from this discipline tend to focus on developing new policies, laws, rules and educating people on what they ‘should’ do. Asking people to change, or educating them as to why they should change, should subsequently cause relevant behavioural change *in theory*. However, achieving real and lasting behaviour change is not so straightforward *in practice* (Dolan, Hallsworth, Halpern, King, & Vlaev, 2010).

Given that the cold system requires effortful processing (due to the limited resource model: Muraven & Baumeister, 2002) as compared to the efficiency of the hot system, bombarding people with information intent on changing their behaviour would stimulate their cold system. Actually processing the relevant information would be an effortful and energy-depleting cognitive task. This requires self-control. For example, bombarding smokers with information such as the negative health consequences of smoking actually depletes their self-control energy. This makes it more difficult for one to resist a cigarette given that one would have less energy and therefore less self-control/willpower to do so. Thus, the behaviour-change tactic is counterproductive.

Behaviour change interventions, such as those to encourage people to stop smoking, have traditionally appealed to people's cold system. However, appealing to the hot system might be more effective (Dolan et al., 2010). Logic dictates that people would behaviourally respond to the hot system more often than they respond to the cold system, given that the hot system presumably dominates the governing of behaviour (Metcalfe & Mischel, 1999). The consequence of this is that people might behave more impulsively and without considering the possible consequences of their actions. There is therefore a clear need to extend from traditional intervention approaches. One option is to integrate the dual-process theory into micro- and macro-level decision-making processes in order to 'embrace' the presumed supremacy of the hot system.

There is therefore a growing realisation that a different model, and a more realistic interpretation of the function of human behaviour, is needed than what is offered by the traditional economic paradigm (Hough, 2013; Loewenstein, Asch, Friedman, Melichar, & Vlopp, 2012). From a behavioural sciences perspective, societal issues are primarily behavioural. For example, obesity, bad manners, unsafe practices, health and fitness are outcomes of what people habitually do or do not do. Any new approach must therefore consequently have behaviour change at its core. Accordingly, policy makers have recently begun to look to the behavioural sciences and its focus on the behaviours of individuals. The establishment of The Behavioural Insights Team in 2010 (also known as The Nudge Unit)²⁰ marked a step change within UK public health policy. This approach demonstrated that a focus on behaviour can elicit significant increases in the effectiveness and efficiency of UK public policies and interventions and can lead to innovative solutions (for e.g., see Costa, King, Dutta, & Algate, 2016; Dolan et al., 2010).

²⁰ <https://www.bi.team/>

With respect to the status of the Welsh language within professional and formal contexts, legislation has turned to the modern day behavioural sciences in order to provide a firm basis to workplaces in Wales for promoting and ‘allowing’ Welsh use. This has the potential to dissolve the traditional stereotypical interpretation that the workplace is generally a predominantly English context. For example, the Welsh Language Act 1993 borne the Welsh Language Board and one of their responsibilities was to ensure that public organisations drew up Welsh language schemes as an integral part of their policies of operation (Llywodraeth EM, 1993). Welsh language schemes detail how a service provider would offer Welsh language services to service users. That this exists could encourage workers to use Welsh with colleagues and for dealing with service users, clients, customers, and so on. However, despite the Welsh Language Board approving 552 language schemes due to the act up until March 2012 (Williams, 2013), evidence is lacking in terms of the impact of these schemes on the use of Welsh by service users/customers, and indeed the use of Welsh by providers both with their users/customers and internally with colleagues/partners.

The popularity and prominence of the availability of bilingual public sector service provision in Wales has slowly grown since the turn of the millennium (no doubt due to The Welsh Language Act 1993). Bilingual service provision gives everyone the equal opportunity to choose Welsh or English when dealing with public services. As a result, near-equal bilingualism is slowly replacing the predominantly English sociolinguistic norm in Wales. Ó Néill (2005) posits that this bilingual framework means that people have to make a behavioural choice in terms of language use, regardless of the situation or context, due to being in a bilingual environment. Bilingual service provision is also a sign of an organisation's good quality (WLB, 1999).

Bilingual service provision mainly adopts either the default choice model, or the active choice model. However, the Citizens Advice Bureau (CAB, 2015) states that the *use* of a service provision through Welsh is generally low as compared to its English counterpart. Evas and Cunliffe (2017, p. 64) believes that this is due to the conventional way of policy making: "many Welsh language services are based on a 'build it and they will come' tradition, ill-informed with respect to recent thinking in human behaviour. Such a neoclassical economical approach would aver that the mere fact that a service is available, and that possible service users are aware of its existence would lead to its use". This suggests that provision does not equate uptake. As such, a more modern behavioural approach to increasing Welsh use is required in order to yield results that are more positive.

The Welsh Government has recently embraced the default choice principle in their efforts to increase the number of people registered on the organ donor list in Wales. An opt-in system requires additional psychological and physical effort (e.g., learning how to register, submitting the form, etc.). This additional effort serves as friction points (or friction costs as termed by the Behavioural Insights Team, 2014). However, the literature suggests that humans are naturally lazy beings (Leggett, 2014). Changing from an opt-in (explicit consent) to an opt-out (presumed/deemed consent) organ donation system removes the friction points for opting in to organ donation. Whilst some might perceive this as a controversial issue, this was a good tactic from the Welsh Government considering their goal to increase the number of organ donors in Wales. As a result, the Welsh Government removed the friction points for opting in to organ donation: one must now make additional effort and thus face the friction points in order to opt out of organ donation. This change in policy means that the Welsh Government presumes all of Wales' inhabitants are organ donors until they remove their consent. That humans are lazy (Leggett, 2014) and tend to go with the flow (Dolan et al., 2010) was a strong argument for flipping the organ donation system. A study by Johnson and Goldstein (2003) also provided theoretical evidence for the effectiveness of this system (see also Moseley & Stoker, 2015).

The lessons of the principle of defaults are applicable to increasing Welsh use. Although supermarkets do not fall under the public sector, the Welsh language option on their self-service tills serves as an excellent example. Research on whether the on-screen Welsh language option significantly elicits a behavioural response in terms of Welsh-speaking customers choosing the Welsh interface is scarce. However, given the concept that humans are lazy and tend to go with the flow, logic would dictate that it is unlikely many people will take the required steps on self-service tills in order to change the interface language to Welsh from the default English setting. Given the concept of the value-action gap (Blake, 1999; Kollmuss & Agyeman, 2002), this might even be true for Welsh advocates. These are the friction points in this context. They require additional effort in order to acquire the Welsh interface. Furthermore, the Welsh option might not be very salient on-screen: some people might not notice it. This digital architecture means that there are no friction points for choosing English. Those responsible for writing and maintaining the software on self-service tills have chosen English on behalf of the users (in much the same way that the Welsh Government have chosen the opt-in organ donation option, i.e., presumed/deemed consent, on behalf of the Welsh population). Therefore, accessing the English language interface on self-service tills is a case of going with the flow. This does not require extra effort, and one might argue that users therefore do not necessarily 'choose' English. Conversely, additional effort in the form of behavioural steps are required in order to override the pre-set English interface. However, making a conscious decision to go against the grain and choose Welsh requires extra effort. This would require enabling the cold system, which would deplete the limited resource.

Perhaps an increase in the uptake of service provisions through Welsh and an increase in Welsh use is achievable by harnessing the principle of defaults. Displaying an English interface as the default choice has the potential to nudge Welsh speakers to go with the flow of the English choice (which is easy²¹ because it does not require extra effort). Setting English as the default choice on behalf of self-service till users removes the friction points for accessing the English interface. Flipping the system to display Welsh as the default might trigger those that *can* use a till through Welsh *to* use a till through Welsh. This removes the friction points for Welsh. This would also be them going with the flow (albeit a different flow) as governed by the hot system (however, this might take some time to get used to and to demonstrate positive effects, i.e., the cold system might be needed prior to the hot system).

²¹ Developed from the MINDSPACE model (Dolan et al., 2010), the first principle of the EAST framework is 'Easy' (Easy, Attractive, Social, and Timely: Behavioural Insights Team, 2014).

The default language choice model presents an issue as regards conforming to the equal treatment of Welsh and English as required by the Welsh Language (Wales) Measure, 2011 (NWA, 2014). A bilingual service should make both featured languages equally prominent in order to both conform to the requirements of the Measure and to increase the validity of language ‘choice’ (an ‘active choice’). The active choice²² model differs to the default choice model because it does not choose a language on behalf of others. Rather, a service that adopts the active choice model requires one to decide through which language one wishes to proceed. The active choice model therefore makes the friction points equally salient for both languages and thus treats both languages equally. This avoids presenting the service through English as the default (thus a language is not chosen on behalf of others) and conforms to the requirement of the Welsh Language (Wales) Measure, 2011 (NWA, 2014) of treating Welsh and English on an equal basis.

Many high street banks operating in Wales adopt the active choice model for their automated teller machines (ATMs). Upon entering a valid card into an active choice-configured ATM, one must select the language in which one wishes to proceed before the machine allows them to input their PIN and subsequently obtain access to their sought service. Evas and Cunliffe (2017) refer to this as a ‘splash screen’. The ATM has not chosen a language on behalf of the user. Therefore, the user must endure the friction points and consciously choose a language. Adopting the active choice model might therefore equally weigh the friction points per language. The same is true when one makes a phone call to certain service providers. There might be two different numbers that one can call with each number representing the language through which one chooses to conduct the call. The caller decides which number to call based on the language the caller wishes to conduct the

²² Other works have used different terms to refer to this concept. For example, active offer (Evas & Cunliffe, 2017; Williams, 2013), coerced choice (Sunstein & Thaler, 2003), and proactive language choice (WG, 2012).

conversation. Alternatively, one might have only one phone number to call. However, a bilingual automatic recorded message asks the caller to press 1 or 2 in order to pick the language in which the caller wishes to conduct the conversation based on the language to which those numbers respectively correspond. No one has chosen a language on behalf of the caller. Thus, the requirement to choose a language equally weighs the friction points for both languages²³.

The WLC (2014) has suggested making the Welsh choice more prominent than the English choice (thus going against the grain of the current sociolinguistic normality of adopting English as the predetermined default choice) given that the end goal is to increase Welsh use. Given the reality of the sociolinguistic state in Wales, demoting/subjugating English is not a realistic option²⁴. Removing the English option altogether would also extinguish the element of choice and would counteract the national vision of being truly bilingual. This would also break the etiquette of Nudge theory²⁵.

²³ However, a variety of additional variables could sway the user in either direction, e.g., prominence level of the languages available, presentation side or number correspondence, colour schemes, font size, and so on.

²⁴ Joan i Mari (2009) made a similar point as regards Catalan and Spanish (as cited in Williams, 2013, p. 136).

²⁵ A nudge “is any aspect of the choice architecture that alters people’s behavior in a predictable way without forbidding any options” (Thaler & Sunstein, 2008, p.6).

CAB (2015) suggested harnessing both the active choice model and the behavioural sciences principle of defaulting in order to increase Welsh use. Griffith (2018) tested this by implementing a randomised controlled trial (RCT) whereby evenly splitting 18 employees from the same organisation into three groups (experimental conditions), (a) English default, (b) Welsh default, and (c) active choice. Griffith asked the participants to search their own employer's website for a specific page. Griffith's interest was the language in which the participants browsed the website per experimental condition. Two participants switched to and maintained browsing the Welsh version of the website in the English default group, five participants continued with Welsh to browse the website in the Welsh default group, and five participants chose to browse the Welsh version of the website in the active choice group.

The key is the different results between the English default group and the Welsh default group. The number of participants that completed their task by browsing the Welsh version of the website demonstrated that defaults can have an impact on the language that people choose to use (deliberately or not, consciously or not) if they are capable of choosing more than one language. That is, the participants were more likely to go with the flow and browse the Welsh version of the website (and vice versa for English) if the researcher had chosen Welsh on their behalf as the default. However, the same number of participants from the active choice group chose Welsh to browse the website. This one study provides initial tentative evidence that each model is equally effective and testifies that their designs are applicable to promote the uptake of service provision through Welsh. See also Evas and Cunliffe (2017) for similar studies as regards Welsh use on technology interfaces.

With respects to using Welsh, friction points are different for each model. The active choice model and the English default model introduce friction points. However, the Welsh default model does not introduce friction points. The friction points for choosing Welsh when others have chosen English on behalf of users (English default model) are more intense as compared to the friction points for choosing Welsh under the active choice model. That is, the odds of using Welsh might be higher if Welsh is the default language choice or if the active choice model equally weighs the friction points for each language by adopting a splash screen. Logic dictates that setting Welsh as the default would therefore harbour the highest chances of success with regards to increasing the uptake of service provisions through Welsh. One does not have to endure the friction points to choose Welsh when others have chosen Welsh on one's behalf as the default. This is because people tend to go along with the primary options as opposed to using energy in order to seek alternative options. The dual-process theory suggests that the hot system would guide this process in order to use the least amount of energy.

CAB (2015) suggest service providers *set* Welsh as the default language choice for staff to initiate interactions with service users as a strategy (perhaps policy-driven) in order to encourage those that *could* use Welsh to respond *to* use Welsh to respond. A behavioural sciences premise known as the chameleon effect associates with this notion. The chameleon effect states that people tend to unintentionally mimic or imitate other behaviours they observe (Chartrand & Bargh, 1999). This can occur without awareness (Dijksterhuis, Smith, Van Baaren, & Wigboldus, 2005). This suggests that this *mirroring* effect would be an automatic, efficient behavioural response (hot system). A service provider using Welsh to initiate interactions with service users²⁶ might prime the service users to unintentionally mirror this behaviour, i.e., use Welsh to respond (which subsequently decreases the friction points for choosing to use Welsh). This can cause behavioural spill over, i.e., one's language behaviour can bring about a change in someone else's language behaviour. Subsequently, the change in someone's language behaviour can then influence another person's language behaviour. This extended behavioural change can influence others in due course through the chain of contact to change their language behaviour, which could extend further still to more people, and so on and so forth. This thesis refers to this language-specific behavioural spill over as the 'linguistic snowball effect'.

²⁶ This takes the onus away from the service user as regards which language to use for their approach.

CAB's (2015) main aim was to explore what factors unfavourably influence Welsh use by Welsh-speaking service users in order to access services. They include (among others), (a) being 'used to' using English, (b) lacking self-confidence in one's own Welsh standards, and (c) feeling anxious regarding making mistakes or being misunderstood if one used Welsh with service providers. Whilst CAB (2015) raises awareness of the factors that influence language choice when accessing services, trying to intervene and increase service users' Welsh use was not within their scope. A variety of other factors can deter Welsh use. For example, (a) lacking in grammatical or mutational knowledge (or any other Welsh-specific elements), which can negatively influence one's confidence levels to use Welsh, (b) lack of awareness of others' Welsh competence²⁷, and (c) perceiving a predominantly English environment, which might subsequently prime (perhaps subconsciously) English use (as governed by the impulsive nature of the hot system to respond to environmental cues: see Thaler & Sunstein, 2008).

²⁷ In Wales, people expect children to have satisfactory English skills. However, the consensus is that this is not true for Welsh. As such, people tend to regard English as the language that harbours the best levels of inclusivity (Thomas & Roberts, 2011). This might also apply to adults, i.e., use English as the 'safe' option in order to avoid possible linguistic awkwardness or conflict. Iaith Gwaith tried to tackle the lack of awareness factor with their speech bubble in order to denote that those wearing the speech bubble (a badge and/or lanyard) were willing Welsh speakers.

On the other hand, the learning environment can encourage the use of Welsh. Specifically, Welsh speakers are more comfortable using Welsh if they learned Welsh at home (WG & WLC, 2015) and that the Welsh language has a strong position within the household (WLB, 2006). Welsh speakers are more comfortable using Welsh if they self-perceive that their level of fluency is strong (fluency is also generally higher if one learned Welsh at home as compared to school) (WG & WLC, 2015) especially if they are first-language Welsh and if they feel that they can explain themselves better in Welsh (Beaufort Research, 2015). Having a positive attitude towards Welsh can also encourage Welsh use, which positively links to one's confidence (BBC Cymru Wales, S4C, & WG, 2013) and desire (Evas & Morris, 2017) to use Welsh. This can fluctuate based on the immediate context (NOP Social and Political, 1996; Evas & Morris, 2017). For example, a study by Thomas and Roberts (2011) suggested that the use of Welsh by pupils was higher inside the classroom as compared to outside the classroom. This might suggest that one's perception of a context can encourage Welsh use, i.e., the school/classroom and/or work context (especially with the support of the employer) can bring out a higher use of Welsh for youngsters as compared to the home context and in the community (as suggested by WG & WLC, 2015). One's positive connection to the Welsh language, the perceived high frequency of Welsh use by others in the wider community, and one's positive perception of opportunities to use Welsh (NOP Social and Political, 1996; WG & WLC, 2015; Evas & Morris, 2017), specifically knowing that there is an opportunity and a right to use Welsh (Beaufort Research, 2015), can also encourage Welsh use.

Evas and Morris (2017) suggested that the language one uses with their interlocutor could influence the language that their interlocutor uses in response. Using Welsh first with an interlocutor could bring about a Welsh response, which can then become a habit (Thomas & Roberts, 2011). However, the status of one's interlocutor can influence whether or not one uses Welsh first (Aberystwyth University, 2014), e.g., colleague, friend, family member, and so on. The interlocutor's 'status' can also be in terms of language, i.e., fluent, non-fluent, or not a Welsh speaker. The presence of non-Welsh speakers can contribute to the domineering status of English within situations where the majority of people are Welsh speakers. There only needs to be one active non-Welsh speaking member to deflect the group's general language choice towards using English (Abley, 2004; Evas & Morris, 2017²⁸; Jones & Morris, 2007; Thomas & Roberts, 2011). This is an example of linguistic courtesy in order to accommodate and include non-Welsh speakers. As such, Welsh use would be restricted to situations where all present interlocutors could follow a discussion through the medium of Welsh. This can significantly contribute to establishing English as the favourable linguistic norm in general: this effect can even persist among a group of Welsh speakers when the one non-Welsh speaker is absent. Evas and Morris (2017) referred to this as one factor that influences the use (and transfer) of the Welsh language within families. Some of their other examples included, (a) being 'used to' speaking English, which inhibits Welsh use and transfer to other family members, e.g., children, (b) lacking self-confidence²⁹ in one's Welsh ability, and (c) fear of being criticised of using Welsh of meagre standard. Another example was the *automatic* use of Welsh, which is highly relatable to the dual-process theory. As in

²⁸ Respondents in this study on Welsh language transmission within the family expressed that others (which, according to the respondents, were their own parents) had advised them to avoid using Welsh in the immediate company of non-Welsh speakers. This suggests that others, which the respondents might see as role models, might have trained this linguistic courtesy function into their behaviour.

²⁹ Williams (2013) referred to lack of confidence and competence (in Welsh) by public-facing staff as a factor that influenced the public to switch to English in order to fulfil their inquiry.

CAB (2015), Evas and Morris (2017) did not attempt to intervene and change language choice.

People tend to behave in accordance to their public promises (Dolan et al., 2010). Therefore, if individuals are to replace their English use habit with a new habit, i.e., use Welsh, they should be up for it and should be willing to commit/pledge to switch to use Welsh (Griffith, 2018). Commitment making (or pledging to behave in a certain manner, i.e., behavioural pledging) can play a powerful role in people's adherence to behaving in ways that enables them to achieve a goal/target (whether it was something they set for themselves, or set on their behalf by an external agent). This is especially true for people that make their commitments public (John et al., 2019) or known to a select group of people, e.g., colleagues. People like to be liked. Therefore, avoiding social damage is one justification and explanation for how public commitment making is effective in terms of increasing the prevalence of certain behaviours, i.e., how commitment-making 'works'. Given that other people are aware of a commitment someone makes, breaking the commitment might lead to a situation where those aware will notice it. Commitment-makers might feel that this could lead to ridicule and negative judgment/perceptions from others, and to others being disappointed in them for what they might regard as 'failing' to stick with their commitment. In order to avoid this possibility and to avoid social damage to their reputation, people tend to honour their commitments just to demonstrate that they are in fact capable of honouring their commitments and increase the odds that they will be praised/recognised/given credit for achieving. A persistent change in behaviour due to making a commitment to behave as such (under the control of the cold system) can eventually become habituated and consequently hot system-driven.

Commitment making can play a powerful role in increasing the odds of achieving behaviour change (Evas & Cunliffe, 2017). For example, Williams, Bezner, Chesbro and Leavitt (2005) gave pedometers to two groups of participants in order to compare walking prevalence between the two groups. The researchers approached the two participant groups with an exercise programme. They gave one group the programme on its own. The other group signed a contract in order to indicate their commitment to achieve the goals of the programme. Eighty-one percent of the commitment group achieved the goals of the programme as compared to 31% of the non-commitment group. This suggests that making a commitment was a significant factor that influenced the level of honouring by the participants to the goals of the programme. As Williams et al. (2005, p. 339) put it, “one explanation for the success of contracts in promoting adherence to the brisk walking is the sense of commitment participants felt to achieving the commitment”. As such, commitment making can be ‘leveraged’ as a device to increase compliance with and achieve a target/goal or as a weapon to encourage and facilitate a certain behaviour. This is applicable for increasing Welsh use.

Previous interventions related to the Welsh language include examples of commitment, including *Iaith Pawb* (WAG, 2003), *Iaith Fyw: Iaith Byw* (WG, 2012), and most recently *Cymraeg 2050* (WG, 2017). The dual-process theory also bears relevance here. The hot system is inherently inflexible. Therefore, the cold system must temporarily hijack the hot system's control in order to begin the successful chain reaction of linguistic behaviour change. Changing to use Welsh with specific people when English use is habitually ingrained would consequently be challenging for those trying to switch because they would have to engage their cold system (which would be an unfamiliar requirement vis-à-vis language choice). However, being up for it and demonstrating this by means of making a commitment can increase the prospect of pulling through this psychological behavioural challenge. Therefore, incorporating the element of commitment making could significantly contribute to the success of an intervention intent on increasing Welsh use in the workplace context.

Behaviour Change, and Shifting the LHC

The overall goal of this thesis was to develop a programme of 'behaviour change' that specifically focussed on shifting the linguistic habit towards Welsh where the current LHC was predominantly English, despite containing a high percentage of Welsh speakers. As one respondent in Evas and Morris (2017) said, "I didn't have any problem myself with speaking Welsh, my grandfather spoke Welsh, quite happy with it, not a problem, but I realised that other people didn't like it, the kids in your town who went to the English school, I realised quite quickly that I'm in a minority here, a visible minority and they used to think things of us, kick us, throw things at us. And so quickly, within a fairly short time, you were aware that there was a 'thing' attached to [the Welsh language] and this led to ambivalent feelings as time went on as you wondered 'why am I marked out like this?'" (p. 115). This can bear relevance to the workplace context. The social norm of a predominantly English workplace context can be a strong factor in reducing interpersonal language choice in terms of the

uptake of Welsh at work. If specific people use English with each other as the norm within a workplace, using Welsh would go against this norm. People that do use Welsh are subsequently marked out as being different because they use Welsh. This might lead those people to shy away from trying again, especially if others kept to English (which would emphasise their difference to the group). However, the mere awareness of the implementation of a programme of behaviour change (with a data collection element) at such workplaces can neutralise this perception.

No intervention-based research that attempted to *change* language choice, where researchers directly measured this potential change via real-time *in situ* observations of conversations, emerged during a literature search. That previous language use interventions have generally failed to establish baseline measurements in order to compare contexts before, during and following implementation meant that adequate impact assessment was not possible. As such, the starting point for this line of research was fuzzy. Conducting robust evaluations of such interventions have not previously been possible. Therefore, constructing and implementing Welsh language use interventions was at the very earliest stages of development at the start of this PhD journey.

Workplace-based interventions should offer employees more opportunities to practice using Welsh more often. According to J. C. Hughes (personal communication, May 26, 2018), the author's main PhD supervisor and an avid Welsh learner (with experience of participating in classes, courses, etc.), there is a common misperception in terms of what can help people increase their use of Welsh. Individuals that claim that they lack confidence in Welsh tend to attend classes, for example, in order to practice and subsequently increase their confidence. However, using Welsh skills in the real world is the most effective way to increase confidence, although people tend not to use their Welsh skills due to their lack of confidence. In order to gather results that reflect people's Welsh skills development, one must collect that data on their use of Welsh in the real world as opposed to using traditional methods such as formal exams. As such, the studies within this thesis attempted to help employees increase their use of Welsh in the real world: specifically, within their natural workplace context. The idea is that this increase in their use of Welsh would nurture more confidence to use Welsh. As a result, they would be more likely to use Welsh, which would then give them more confidence to use Welsh, and the circle continues to turn (echoing the linguistic snowball effect) until they form a new Welsh language use habit.

Interventions should also have a longer-term aim of establishing their bilingual workplace as 'flexible linguistic contexts' while simultaneously building staff teams' skills and confidence to use Welsh. The repeated practice of Welsh has the potential to evolve into *practice makes permanent*. Welsh use can slowly become a new habit with time. This repeated practice can subsequently substitute the English use habit. However, the challenge must be endeavoured in order to achieve habit formation, where Welsh use will no longer be effortful (cold system) due to the hot system taking over from the cold system. The four studies included within this thesis kick-started this journey. A combination of insights from the behavioural sciences already discussed, a pre-existing (early stages of development)

Welsh language mentoring scheme at the testing organisation (Study 1 & Study 2, Chapter 2, and Study 3, Chapter 3), and developing on a simple idea derived from the Basque Country (Study 4, Chapter 4) contributed to the realisation of these studies. They form a foundation that has the potential to expand into pioneering research that can ultimately make a significant contribution to achieving the step-change required in the Cymraeg 2050 strategy as regards increasing Welsh use.

Given the limitations of indirect, subjective self-report methodologies, “a more integrated, holistic perspective on systemic language use in organizations is required” (Williams, 2013, p. 106). One option for evolving from the self-report paradigm is to adopt direct observational methods. Directly observing *in situ* and recording overt behaviours can provide an opportunity for someone else (other than members within the sample) to collect data on live language use that are more objective. This can offer a real time objective method for collecting data on actual language use (Urla, 2013) in a natural setting. By observing, therefore, researchers can avoid relying solely on participants’ vague, time-delayed, retrospective and subjective estimation of their own self-perceived past events or behaviours. As such, the studies included within this thesis placed a priority on avoiding the exclusive reliance on self-reports and adopted the observational methodology in order to explore colleagues’³⁰ active use of Welsh at work. Study 1 & Study 2, Chapter 2, debuted this methodology. Study 3, Chapter 3 was a qualitative approach, and Study 4, Chapter 4) returned to utilising an observational methodology (see Table 3 for a timeline indicating when the author collected the data for each study). Using systemic research methods and developing objective measures of actual language choice change is therefore a crucially

³⁰ All employees that served as participants in the studies within this thesis were administrative employees at multiple services offered by a university in Wales.

important part of the journey to evidence-based language change programmes specifically focused on increasing the behaviour of Welsh use.

This behavioural-sciences approach strifes away from the traditional approach of generally promoting the Welsh language, and the implementation of interventions without evaluating their efficacy, and gets ever closer to the nuances of evidence-based behaviour change. Exploring the potential effects of interventions on Welsh use is therefore crucial to the growth of knowledge on what works to promote Welsh use in order to contribute to the realisation of the Cymraeg 2050 vision. As the Welsh Government indicated, “if the strategy’s objectives are to be realised, we will need a firm evidence base and a commitment to evaluate the effectiveness of programmes and interventions delivered in its name” (WG, 2017, p. 77). The empirical chapters within this thesis therefore make a small, yet significant, evidence-based contribution towards bridging this prominent gap that holds potential for guiding future works as regards policy planning. The bilingual workplace served as the contextual focus for each study (which is one of the contextual focuses in the Cymraeg 2050 strategy).

Table 3

Timeline for collecting the data per study

	Timeline																								
Study	May 2016	June 2016	July 2016	August 2016	September 2016	October 2016	November 2016	December 2016	January 2017	February 2017	March 2017	April 2017	May 2017	June 2017	July 2017	August 2017	September 2017	October 2017	November 2017	December 2017	January 2018	February 2018	March 2018	April 2018	May 2018
1				August 1, 2016 – October 31, 2016																					
2										February 20, 2017 – July 14, 2017															
3A				May 3, 2016 – March 2, 2017																					
3B									January 27, 2017 – April 4, 2017																
4																	August 21, 2017 – May 3, 2018								

Chapter 2, Study 1 & Study 2: A Direct Observational Tool for Quantifying Dyadic Linguistic Code Choice Practices: Piloting the ‘BiDOT’ in a Bilingual Workplace

Abstract

Researchers usually use indirect self-report measures to gather data on language use. However, their interwoven limitations present issues as regards their ability to represent actual language use behaviour. Observations might offer a solution to this limitation. As such, the author developed the Bilingual Dynamic Observational Tool (BiDOT), a direct measure for language use, aimed at gathering data that are more accurate on real-world language choice behaviours within bilingual settings. The author piloted the BiDOT at a bilingual workplace in study 1 and found that it was a practical measure for collecting language use data from a sample of workers. The author subsequently tested the BiDOT as a measure for language use at a separate bilingual workplace enrolled on a Welsh language mentoring scheme during three experimental phases (study 2). The use of the BiDOT allowed between-phases comparisons on the internal use of Welsh in study 2: the results demonstrated an increase in Welsh use between-phases, suggesting that Welsh use increased as a function of enrolling on the Welsh language mentoring scheme. These studies ultimately demonstrated the practicality of the BiDOT as a tool for measuring language choice behaviours. These initial results are encouraging in the context of gathering behavioural data on language choice via observations and make a significant contribution in bridging the lack of assessment implemented in order to measure the true impact of language-driven interventions. A discussion on the implications of these two studies, and suggested next steps in order to continue developing this line of research, form the conclusion of this chapter.

Keywords: observation, BiDOT, bilingual workplaces, language scheme, minority languages.

Introduction

A big issue that lies with competence data as regards minority languages, e.g., census statistics, is that they are vague and do not suggest the extent to which a population uses or interacts with a language (Baztarrika, 2013; Davies, 2014). Despite the value of competence data, the health or vibrancy of a language is therefore missing without data that are more detailed. The 1961 census report in Wales recognised this (General Register Office, 1962) and gains support from research in other countries. For example, the consensus in the Republic of Ireland is that an estimated 1% of the population uses Irish, despite approximately one-third possessing the skills to do so (Davies, 2014). The 2001 Street Measurement of Basque Use in the Basque Country (*Euskararen Erabileraren Kale Neurketa*: Martínez de Luna et al., 2006, p. 73) indicated that 13.3% of public conversations were through Basque despite the 2001 census indicating that 27.6% of the population could speak Basque (Altuna & Urla, 2013). These examples support the claim that the actual use of a language is probably below the data suggested in competence databases (such as censuses). Exploration of the actual use of a language within the real world's natural contexts is therefore essential in order to understand the vibrancy of a language.

Self-report methodologies are common in multilingual research (Altuna & Urla, 2013; Zhuravleva et al., 2016). However, given their limitations, one can question the reliability and validity of self-report information (see Chapter 1 for a discussion on the limitations of utilising self-report methodologies). Conversely, direct *in situ* observational measures usually provide information that are more representative of the behaviour of interest (Miltenberger, 2008). Although observations too have their limitations, they generally lead to data that are more representative of occurrences of events. Observing language use also avoids actively involving the population of interest as part of the data collection process (which could cause them to deflect from their normal behaviours) and observations is not biased such as during

self-reports (Gravetter & Forzano, 2009). Observations also increase the probability that the behaviour of interest occurs naturally (Elmes et al., 2003).

A literature review returned one large-scale, longitudinal quantitative example of direct objective naturalistic observations of language use, namely the Street Measurement of Basque Use (*Euskararen Erabileraren Kale Neurketa*: Martínez de Luna et al., 2006, p. 73), where researchers systematically collected real time data on the public's natural verbal language use on the street throughout the Basque Country. Kale Neurketa's methodology "is the only one of its kind" according to its director (Altuna & Urla, 2013, p. 210) due to its integral observational design and is as a result unique compared to other studies on actual language use. Bilingual countries could find conducting observations invaluable to understand the health state and prevalence of minority languages (Baztarrika, 2013). This is true for the Welsh context. The 2011 census results in Wales indicated that approximately 562,000 people could speak Welsh (19% of Wales' population: Welsh Government [WG] & Welsh Language Commissioner [WLC], 2015). However, knowing that 19% of Wales' population can speak Welsh³¹ is insufficient in terms of providing information on how often Welsh is used (including by who, when, where, why, how...) and understanding its vibrancy.

³¹ The accuracy of census results are also questionable. There might be people in Wales that can speak Welsh, but indicated that they cannot speak Welsh on the census because they do not use Welsh. There might also be people in Wales (both Welsh-speaking and non-) that did not complete the census. It is also possible that people that cannot speak Welsh has noted that they can speak Welsh due to aspirations to be able to do so given their Welsh identity.

In the Welsh context, Thomas, Lewis, and Apolloni (2012) is one example of a study that quantified the language use behaviours of teachers and pupils within the school setting. They tallied the different types of interactions that occurred during *in situ* observation sessions on an observation sheet. They found that second-language Welsh pupils did not engage in as many extended interactions in the classroom as first-language Welsh pupils. Despite the differing contextual focuses, Thomas et al. (school: 2012) and this chapter (workplace) do have a significant congruency. That is, *quantifying* language use behaviours via observational methods. Beyond the work of Thomas et al. (2012), however, live and direct observation in order to *quantify* language behaviour is lacking in Wales³², despite previous writings calling upon this (see for e.g., Cunliffe et al., 2013; Evas & Cunliffe, 2017; Evas & Morris, 2017). As such, the author developed the *Bilingual Dynamic Observational Tool* (BiDOT: see Appendix A) in order to naturalistically conduct real time, objective *in situ* quantitative observations of dyadic verbal language choice behaviours occurring in real-world bilingual contexts. Approaches from the behavioural sciences (Heather et al., 2016), the Street Measurement of Basque Use (Martínez de Luna et al., 2006), the foundations of the work by Thomas et al. (2012), and Altuna and Basurto's guide to language use observation (in which they recommend conducting observations to collect quantitative data on language use within bilingual workplaces: Altuna & Basurto, 2013, pp. 99-105) served as the inspiration to develop the BiDOT. Birnie (2018) used a similar measure to the BiDOT in order to collect quantitative language use data (Gaelic) within Stornoway's public domain. Birnie's data collection procedure was also similar to the data collection procedure utilised in

³² Whilst other projects in Wales have used observation in the context of language use, its utilisation was either conducted simultaneously alongside self-report procedures such as questionnaires and/or participant interviews, or solely but of a qualitative nature (see for e.g., BBC Cymru Wales, S4C, & WG, 2013; Canolfan Ymchwil Busnes a Gwybodaeth y Farchnad, 2011; Clapham, 2012; Deuchar, 2007; Deuchar, Donnelly, & Piercy, 2016; Gruffudd, 2010; Jones, 2010; Jones & Morris, 2007; Jones & Morris, 2009; Lewis, 2003; Misell, 2000; Morris, 2012; Morris, 2013; Morris & Jones, 2007; Musk, 2006; Roberts & Thomas, 2009; Selleck, 2013; Thomas & Roberts, 2011).

the two studies within this chapter (see Data Collection) and that used by Altuna and Basurto's guide (2013) in order to compare Gaelic use between public spaces *with* a statutory Gaelic plan and public spaces *without* a statutory Gaelic plan. However, the contextual focus of this chapter, and the thesis as a whole, is the workplace. The overall aim is to compare Welsh use behaviour between different study phases for the same participants in order to assess the potential impact of an intervention on the prevalence of Welsh use at work.

This chapter contains two studies focussed on using the BiL DOT in a bilingual workplace context. Study 1 piloted the BiL DOT as a naturalistic observation methodology to collect language use data in order to obtain a better understanding of the linguistic behaviour of a sample of staff at one department of a university in Wales. Some of the participants of this pilot study simultaneously enrolled on a voluntary scheme (namely the Welsh language mentoring scheme) for staff that sought help in order to use more of their Welsh skills at work. This afforded the opportunity to assess the BiL DOT as a practical measure of quantitative language choice behaviours. Study 2 used the BiL DOT as a measure to collect language choice data pre-, mid- and post-intervention at another department where all staff had enrolled on the Welsh language mentoring scheme (which served as the intervention). This offered an opportunity to pilot the BiL DOT as a measure to assess the impact of interventions intent on increasing the use of a language. The author believed that there would be an increase in the sample's internal use of Welsh due to taking part in the scheme.

Study 1: Piloting the BiDOT

Methodology

General Method

The author utilised and piloted the BiDOT (see Appendix A) for the first time (with 20% IOA) in order to collect quantitative data on how often any two employees used Welsh and English in conversations via naturalistic observations.

Participants

The department as a whole employed more than 100 people during the study timeline; 14 of whom had registered on the Welsh language mentoring scheme³³. The author conducted all of the observations from the same location (the reception area at one departmental division) due to the architectural nature of the workplace. In addition, most of the employees that had registered on the Welsh language mentoring scheme either worked within the walls of the division or worked close by (thus increasing the odds of observing employees that had registered and employees that had not registered on the scheme). As a result, the author³⁴ observed 16 employees speaking with a colleague during the study timeline. Table 4 indicates the number of observed participants by their fluency level and their role on the Welsh language mentoring scheme.

³³ As a mentor, $n=5$; as a mentee, $n=9$.

³⁴ The author was involved in collecting the entire dataset.

Table 4

Number of observed participants by their fluency level and their role on the scheme

Role on Scheme	Fluency Level	
	Fluent	Non-fluent
Mentor	4	0
Mentee	2	2
Not Involved	5	3

The author used the additional information on the participants' email MailTip feature (for e.g., see Appendix B) in order to determine each participant's fluency (fluent or non-fluent) and sought their own description of their fluency for confirmation. The author categorised those whose email account displayed "Rydw i'n siarad Cymraeg/I speak Welsh" as fluent in Welsh, and those with "Rydw i'n siarad rhywfaint o Gymraeg/I can speak some Welsh" as non-fluent in Welsh. None of the participants had a blank MailTip (which would have indicated no Welsh ability)³⁵. The author confirmed the fluency levels of all the participants throughout the observation sessions, i.e., if the author had categorised a participant as fluent via MailTip, and they did not seem to be fluent to us during observations (or vice versa), the author changed their fluency level in the dataset.

³⁵ The employees decide which MailTip they want displayed on their email account.

Materials

The author piloted the BiDOT (see Appendix A) to note which language was used by any two consenting employees (dyadic conversations) on a laptop via direct *in situ* naturalistic observations. The author also distributed a standard information sheet (see Appendix C) and consent form (see Appendix D) to all employees housed where the observations would occur prior to commencing observations. All other department-wide employees (not based at the observation location) that happened to visit during an observation session also obtained a copy of these documents.

Design

The author implemented a naturalistic observation design for this study. The author did not introduce any changes to the workplace environment due to the study other than being present.

Ethical Considerations

The university's relevant Ethics Committee granted ethical approval to conduct this study (ref. 2016-15573). The author obtained verbal informed consent by all the Welsh language mentoring scheme participants during a group meeting prior to commencing observation sessions and subsequently obtained their written consent via a standard informed consent form (see Appendix D). Their formal informed consent indicated that they granted permission for observations to occur in order to collect data on their language choice behaviour should they converse with consenting colleagues when the author was present. The director of the department also circulated an internal email in order to inform all staff department-wide of the study (including those that did not register on the Welsh language mentoring scheme): none of the staff raised any objections.

The exclusive behaviour of interest was in which language any two consenting employees at the department conversed verbally. The author therefore did not collect data on conversation topics. The author offered to leave to allow the staff to continue with their work when/if they needed to have private conversations or meetings at the reception, thus avoiding any possible distractions or interferences as a direct result of being present. The author protected the identities of the participants by numbering them in the order in which the author observed them. The author ensured the participants that participating would not lead to any punishments.

Procedure

The author invited all employees at the department to participate in the Welsh language mentoring scheme prior to arranging and commencing observations. The author subsequently invited those that responded positively to an introductory meeting for an overview of the scheme's features and offered prospective participants the opportunity to discuss and ask questions before agreeing to participate. See Chapter 3 for a discussion on the Welsh language mentoring scheme's methodology. Some employees that had disclosed an interest in registering on the scheme could not attend this meeting. The author consequently circulated an email (see Appendix E) summarising the content of the meeting to all employees that had disclosed an interest.

Observations.

The author conducted thirty 1 hr 30 min midweek observation sessions³⁶ from one location (reception area) over three months once a day: 9:00am-10:30am or 2:30pm-4:00pm³⁷ (see Table 5 for the number of observation sessions that the author conducted). The author sent a weekly observation schedule via email to one employee in order to circulate the schedule with appropriate colleagues (see Appendix F for an example). This gave all appropriate employees the opportunity to decline any proposed observation sessions should it be inconvenient³⁸.

Table 5

Number of observation sessions conducted by the author

Day	Time of Day	
	Morning	Afternoon
Monday	3	3
Tuesday	2	4
Wednesday	3	3
Thursday	4	2
Friday	3	3

³⁶ An employee that worked in the reception suggested observing for 1 hr 30 min per session because it was not too long a timeframe for the author to be present in one stint and not too short a timeframe for it not to be worth it.

³⁷ An employee that worked in the reception suggested these as good observation times due to the prevalence of conversations likely being at its highest.

³⁸ See also the General Discussion for this chapter regarding a possible limitation to informing participants of intended visits.

Data Collection

The BilDOT (see Appendix A) offered an innovative direct naturalistic method to collect verbal dyadic conversations (amongst consenting staff only) *in situ* on a laptop. When the author observed any two consenting employees conversing verbally, the author indicated who initiated the conversation and in which language (Welsh or English) and who their intended interlocutor was and in which language they responded (Welsh, English, or no response). The author also noted if any other participants were present during each conversation. Code switching³⁹ during a dyadic conversation resulted in noting a new conversation. However, code mixing⁴⁰ did not result in a new data point. The BilDOT also enabled the author to take field notes for possible consideration for when the author explored the data.

The criteria for noting a conversation was for one employee to say something with at least four words to a consenting colleague. For example, the author did not note an employee saying “Bore da” to a colleague without getting a response (or getting a response that contained fewer than four words). The research team made this decision due to a consensus based on experience that passive speakers and learners of Welsh tend to use incidental Welsh at the beginning and end of conversations whilst using English for everything else. Noting dyadic conversations that contained less than four words by one member of the dyad as a data point would have then resulted in a code switching event. On one hand, this would have

³⁹ Switching from one language to another within the same conversation. See Table 6 for an example of the BilDOT that includes participants engaging in code switching. An example of this behaviour can be seen in a participant quote included in Evas and Morris (2017, p. 112). This has also been referred to as ‘borrowing’ from one language when using another which, as Thomas and Roberts (2011, p.90) indicates, is “a practice that may, in turn, result in perceived weaknesses in the language, and low levels of confidence and subsequent use”.

⁴⁰ Borrowing words from one language where the conversation is ‘foundationally’ conducted in another language, e.g., “elli di egluro hynna efo mw y *detail*, plis”. Some of the quotes included in the Welsh version of Study 3, Chapter 3 serve as examples of this behaviour, i.e., some participants were foundationally speaking in Welsh and seamlessly inserted English words into their sentences. The consensus is that this is common practice in Wales. See also a participant quote included in Evas and Morris (2017, p. 108) for one explanation as to why code mixing is adopted when English is adopted as the foundational language.

inflated the use of Welsh in the dataset given the consensus that this was a regular occurrence in general. On the other hand, the author might have missed ‘short contribution’ conversations (of variable durations) occurring in either language, i.e., conversations where each member of the dyad used less than a handful of words per utterance.

Conversations involving the participants and people from whom the author did not obtain their informed consent (e.g., colleagues from another department, service users/members of the public, etc.) did not contribute to the dataset. The author avoided initiating conversations with the participants during the observation sessions other than polite greetings in order to reduce participant reactivity (see General Discussion) and to avoid distracting them. However, the author naturally sustained casual conversations (initiated by the participants) until it faded naturally. Neither participant-observer conversations, nor participants’ conversations that simultaneously occurred during participant-observer conversations, contributed to the dataset. The author only collected data on verbal language behaviour (i.e., excluding written language behaviour), and conversation content was not a variable of interest.

Inter-observer agreement (IOA).

An additional observer conducted six of the 30 observation sessions (20%) alongside the author. This presented the opportunity to compare the data that was collected between-observers in order to strengthen the validity of the measure (Cooper et al., 2014). The author found an 83.5% IOA rate across the six IOA sessions.

Table 6

An example of the BiDOT with some noted (fake) conversations (names are those of the research team)

Conversation	Language		Participant (initiator)	Participant (target interlocutor)	Others Present	Other Qualitative/Additional Information about Context?
	W	E				
1	X		Lowri Carl	Carl Lowri	Arwel Emily	
2		X	Carl Lowri	Lowri Carl		
3	X		Carl	Lowri		
4		X	Carl	Lowri		
5	X		Lowri Carl	Carl Lowri		
6		X	Emily Carl	Carl Emily	Arwel Emily	
7		X	Lowri	Emily	Arwel Carl	Emily's response of 'mmhm' was not enough to note as an active language contribution to the conversation.
8		X	Arwel Emily	Emily Arwel	Carl Lowri	

Note. Conversations 1-5 are in fact the same conversation (indicated by the merging of the rows under the Others Present column). However, given that the participants switched languages during this same conversation, the author noted them as separate conversations, i.e., data points.

Results

The dataset contained the number of each possible type of conversation for every dyad ($n=91$) over the 45 hours of observations. The participants used English more often than they used Welsh for the 819 dyadic conversations that the author observed: in monolingual English, $n=663$; in monolingual Welsh, $n=91$; bilingual, $n=9$ (conversation initiator in English and interlocutor in Welsh, $n=3$; conversation initiator in Welsh and interlocutor in English, $n=6$); no-response, $n=56$ (English, $n=50$; Welsh, $n=6$). Figure 2 illustrates the percentage of time in which the author observed each conversation type.

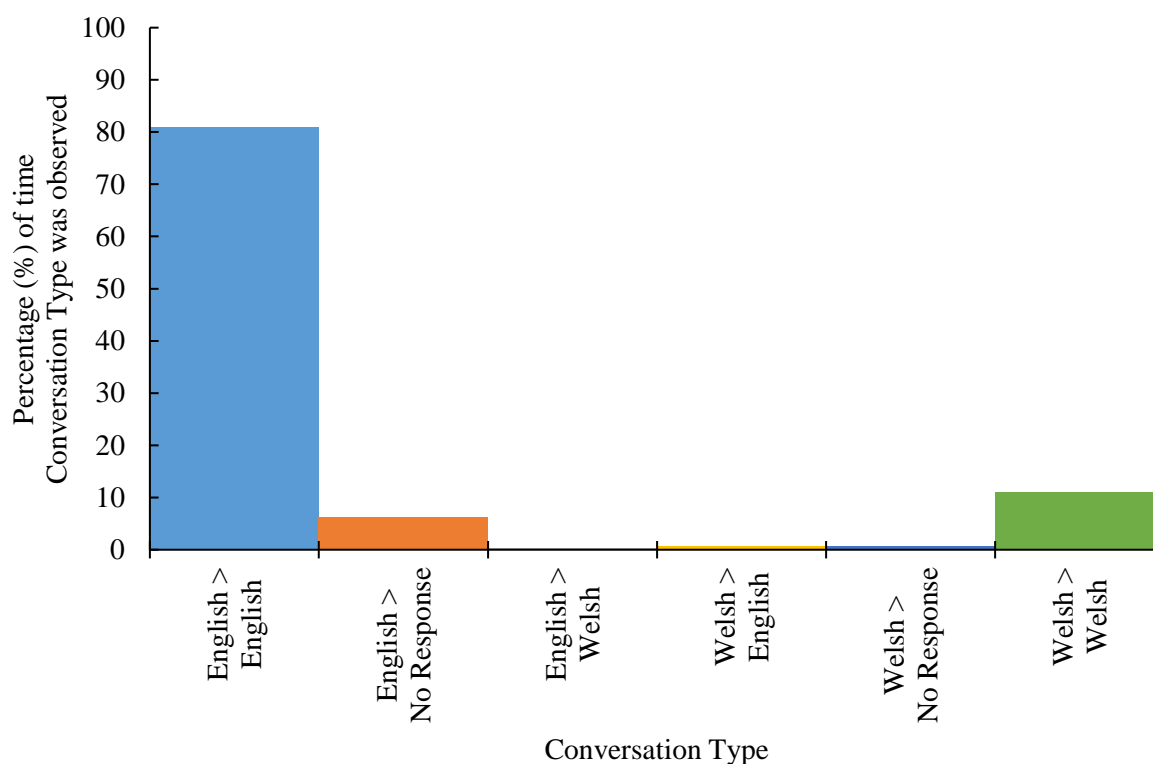


Figure 2. The percentage of time in which the author observed each conversation type.

The author also categorised conversations between individuals with matching, and different, fluency levels (fluent Welsh speakers and non-fluent Welsh speakers), and individuals with matching, and different, roles on the Welsh language mentoring scheme (mentors, mentees and not involved).

By the Participants' Fluency Level

Table 7 shows the observed number and percentages of every possible type of dyadic conversation based on fluency level. Table 8 shows the total number of conversations that the author observed between all participants based on their fluency level.

Table 7

Number and percentages (%) of observed dyadic conversations

Fluency Level	Conversation Type											
	E-E		E-nr		E-W		W-E		W-nr		W-W	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
F-F	358	43.72	28	3.42	3	0.37	5	0.61	6	0.73	90	10.99
F-nf	96	11.72	7	0.85	0	0	0	0	0	0	0	0
nf-F	195	23.81	15	1.83	0	0	1	0.12	0	0	1	0.12
nf-nf	14	1.71	0	0	0	0	0	0	0	0	0	0

Note. Conversation Type: E = English, W = Welsh, nr = no response; the first letter indicates the language used by the conversation initiator, and the second letter/digraph indicates the interlocutor’s language choice. Fluency Level: F = Fluent, nf = Non-fluent; the first letter/digraph indicates the conversation initiator’s fluency level, and the second letter/digraph indicates the interlocutor’s fluency level.

Table 8

Number of conversations initiated by fluent and non-fluent participants with other fluent and non-fluent participants

Initiator	Interlocutor	
	Fluent	Non-fluent
Fluent	490	103
Non-fluent	212	14

Welsh use was less prevalent ($n=101$) than English use ($n=389$) when fluent participants initiated conversations with their fluent colleagues. Fluent participants used English to initiate all their conversations with non-fluent colleagues ($n=103$). Welsh use was also less prevalent ($n=2$) than English ($n=210$) when non-fluent participants initiated conversations with their fluent colleagues. All conversations by non-fluent participants ($n=14$) were in English. Figure 3 illustrates the proportional trend in language use across participants based on their fluency level.

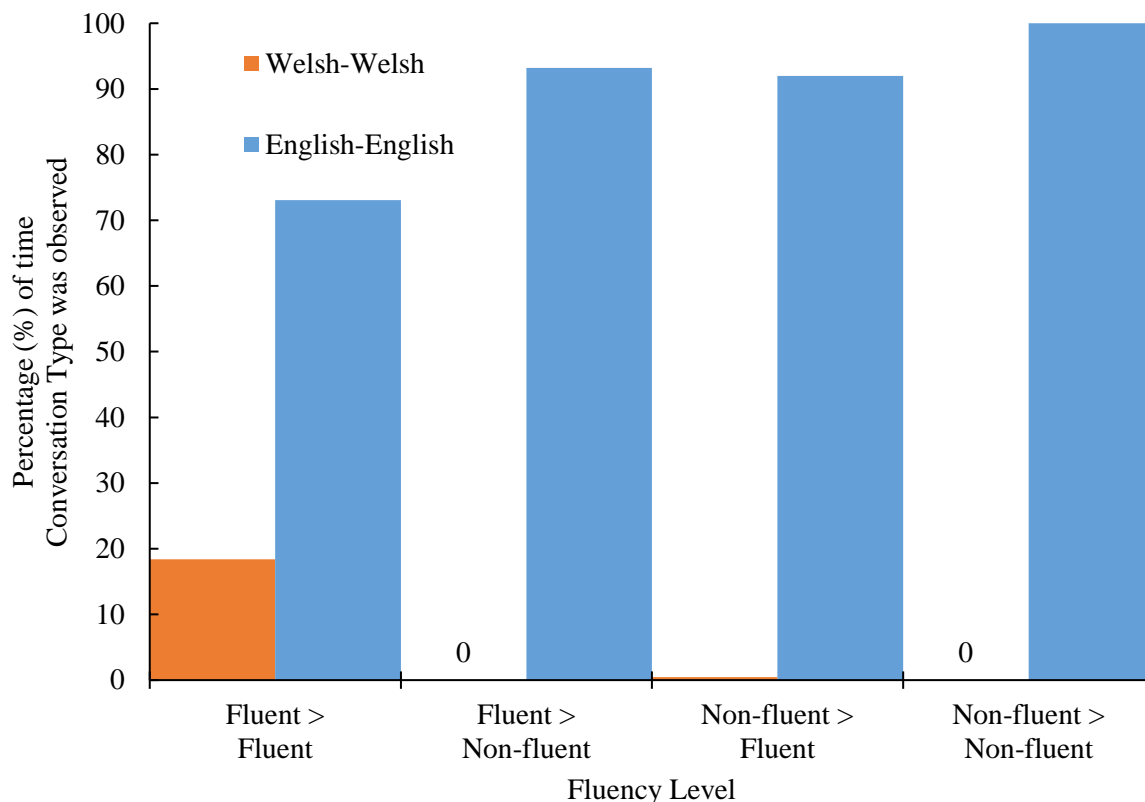


Figure 3. Proportional use of Welsh and English by all participants to initiate a conversation based on the dyad’s fluency level.

By the Participants’ Role on the Welsh Language Mentoring Scheme

Table 9 shows the observed number and percentages of every possible type of dyadic conversation based on scheme role. Table 10 shows the total number of conversations that the author observed between all participants based on their role on the scheme. Figure 4 illustrates the proportional language use trend across participants based on their role on the scheme.

Table 9

Number and percentages (%) of observed dyadic conversations

Scheme Role	Conversation Type											
	E-E		E-nr		E-W		W-E		W-nr		W-W	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
MR-MR	2	0.24	0	0	0	0	0	0	3	0.37	38	4.64
MR-ME	195	23.02	17	2.08	0	0	2	0.24	1	0.12	27	3.3
MR-NI	16	1.95	2	0.24	0	0	0	0	0	0	4	0.49
ME-MR	187	22.83	10	1.23	1	0.12	1	0.12	0	0	10	1.23
ME-ME	132	16.12	13	1.59	1	0.12	2	0.24	1	0.12	1	0.12
ME-NI	21	2.56	1	0.12	0	0	0	0	1	0.12	2	0.24
NI-MR	40	4.88	1	0.12	1	0.12	0	0	0	0	4	0.49
NI-ME	69	8.43	6	0.74	0	0	1	0.12	0	0	5	0.61
NI-NI	1	0.12	0	0	0	0	0	0	0	0	0	0

Note. Conversation Type: E = English, W = Welsh, nr = no response; the first letter indicates the language used by the conversation initiator, and the second letter/digraph indicates the interlocutor's language choice. Scheme Role: MR = Mentor, ME = Mentee, NI = Not involved; the first digraph indicates the conversation initiator's scheme role, and the second digraph indicates the interlocutor's scheme role.

Table 10

Number of conversations initiated by mentors, mentees, and uninvolved participants with other mentors, mentees and uninvolved participants

Initiator	Interlocutor		
	Mentor	Mentee	Not Involved
Mentor	43	242	22
Mentee	209	150	25
Not Involved	46	81	1

Welsh use was more prevalent ($n=41$) than English use ($n=2$) when mentors initiated conversations with other mentors. However, Welsh use was less prevalent as compared to English use when mentors initiated conversations with mentees (Welsh, $n=30$; English, $n=212$) and with individuals not registered on the scheme (Welsh, $n=4$; English, $n=18$).

Welsh use was less prevalent ($n=11$) than English use ($n=198$) when mentees initiated conversations with mentors. The same was true for mentees initiating conversations with other mentees (Welsh, $n=4$; English, $n=146$) and for mentees initiating conversations with individuals not registered on the scheme (Welsh, $n=3$; English, $n=22$).

Individuals not registered on the scheme initiated conversations more often in English than in Welsh with mentors (English, $n=42$; Welsh, $n=4$) and mentees (English, $n=75$; Welsh, $n=6$). The author observed only one conversation (English) between individuals not registered on the scheme. As such, comparing language behaviour between individuals that had registered on the scheme and individuals that had not registered on the scheme was not possible.

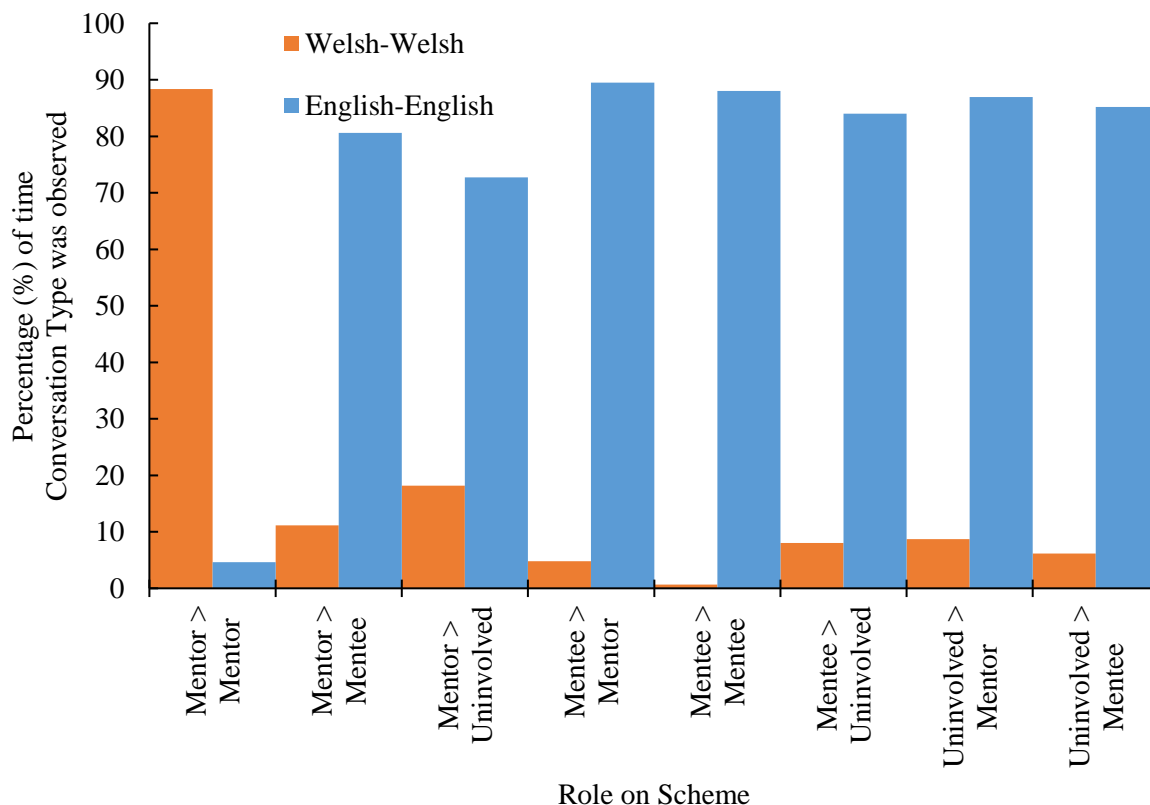


Figure 4. Proportional use of Welsh and English by all participants to initiate a conversation based on the dyad’s role on the Welsh language mentoring scheme.

Discussion

The author had two primary motives for conducting this study, (a) to conduct the first observation-based exploration of actual linguistic behaviour, and (b) to pilot the BiLDOT as a potential practical measure for language choice behaviour within a real-world bilingual context. The BiLDOT offered a potential means to look at different factors that might play a role in the staff’s language choice in their bilingual workplace. The factors that the author considered for exploration was the participants’ Welsh fluency level and their role on the Welsh language mentoring scheme. Statistical analysis in order to make comparisons were beyond the scope of this study given that the author collected all the data in the same experimental phase as a test to investigate the BiLDOT as a practical measure for collecting language use data.

Welsh use was less prevalent overall than English use. Figure 3 indicated that fluent participants used English to initiate and maintain the vast majority (approximately 73%) of their conversations. English use was also higher than Welsh use when fluent participants initiated conversations with non-fluent participants, and vice versa. The author did not observe fluent participants initiating Welsh conversations with their non-fluent colleagues, despite the Welsh language mentoring scheme's active status when the author conducted the observations. Conversely, non-fluent participants did initiate Welsh conversations with fluent colleagues and, in one of these instances, received an English response. This suggests that one's perception of others' fluency level can therefore influence the language in which one chooses to initiate their conversations.

These linguistic patterns require careful interpretation. The author happened to observe more fluent participants ($n=11$) than non-fluent participants ($n=5$) through random chance. This increased the probability of observing fluent participants conversing with each other, as compared to fluent participants conversing with non-fluent participants, and non-fluent participants conversing with each other. One might interpret this as a limitation of the study. However, it is important to consider the importance of maintaining a naturalistic design in order to observe and collect data on the most naturally occurring behaviours. This happened to be the natural make-up of this particular setting in terms of the number of fluent speakers that the author observed and the history of how they were used to interacting with each other. It is also important to consider the main objective of this study, namely to put the BildOT to its first real-world test as a potential practical measure for language choice behaviour within a natural bilingual context. Whilst the imbalance between the number of fluent and non-fluent individuals is an interesting matter to explore in further research, it was not relevant to the development of the BildOT.

The author also interprets the above patterns as behavioural habits within the sample. Fluent participants used English together for approximately 73% of their conversations. This suggests that the habit of using English had been set as the default and norm behaviour between dyads when they first became colleagues, especially if they were not aware of each other's Welsh skills. Should the habit have been set at the very beginning of their working relationship, time might have passed until dyad members became aware of each other's Welsh language skills. Perhaps one or both members of the dyad would subsequently find it difficult and/or perhaps odd to shift their language behaviour to use Welsh. Therefore, maintaining English use might be easier. This would not require additional cognitive effort or energy due to interlocutors having become accustomed to using English, i.e., it 'just happens' automatically⁴¹. Looking at early dyadic conversations in order to investigate whether language choice becomes ingrained and set as the default habitual behaviour from the outset, and how long it takes to establish this habit, is an interesting direction in which to take future research. It is also plausible that the English use habit for fluent dyads occurred due to a consistent presence of colleagues that could not understand Welsh. Whilst there is a column within the BiDOT for noting whether others were present, practical reasons meant that the author could not analyse the impact of the presence/absence of others on the language choices made by dyads. Future researchers should explore the potential impact of the presence/absence of others on people's language choices.

⁴¹ This corresponds to the notion of a 'hot system' derived from the dual-process theory (see Behaviour Change in Chapter 1 for a discussion on the relevance of the dual-process theory in the context of language choice).

The author examined language use based on the participants' role on the Welsh language mentoring scheme in addition to Welsh fluency level. Figure 4 showed that mentors spoke Welsh together for approximately 88% of their conversations. Comparing this to the fluency exploration reveals a vast difference, i.e., fluent participants used Welsh for approximately 18% of their conversations. All observed mentors ($n=4$) and half of the observed mentees ($n=2$) were categorised as fluent. It is therefore possible that the label of being a mentor had a self-fulfilling prophecy effect on those occupying that label to use Welsh with colleagues also occupying this label. Mentors initiating conversations with mentees, where they used Welsh for approximately 11% of their conversations, support this. Mentors might have used less Welsh with mentees because they occupied the mentee label, despite two of the four observed mentees being fluent in Welsh. Therefore, the label of being a mentee might be stronger than the label, or the perception⁴², of being a fluent Welsh speaker. Further research could look deeper into the potential effects of having and/or not having linguistic 'labels' on language choice behaviour.

⁴² Some participants might not have perceived these two mentees as being fluent Welsh speakers given their lack of Welsh use. The author did not share the fluency status of each participant with the participants. However, the author did inform the participants of who had registered on the scheme as mentors and mentees.

For the first time, the author attempted to collect robust and empirical quantitative data on actual language choice behaviour within the bilingual workplace via direct naturalistic observations. Anecdotes and self-reports are transparent and vague. Consequently, they might not represent actual language use. The author accordingly took a step further and applied a more naturalistic observational-rigour methodology to the task of measuring language behaviour within a specific bilingual workplace. This provided a clear linguistic dynamic as a small yet significant step toward understanding language use behaviour that lay behind raw demographics data on language ability. In this study, the author tested the BiL DOT's practicality in terms of measuring and collecting language use data that are more robust. The BiL DOT offers the opportunity to observe language behaviour *in-situ* and its development can offer important implications for further research in fields such as bilingualism, behavioural psychology, and linguistics (including sociolinguistics and psycholinguistics) that investigates language use as a form of behaviour.

One of the BiL DOT's primary purposes is to collect data on language behaviour during multiple experimental phases in order to evaluate the impact of language change interventions, e.g., the Welsh language mentoring scheme. An important goal is to find evidence of interventions that shift language behaviour by increasing the prevalence of Welsh use. Finding a practical measure of the impact of an intervention is therefore accordingly (one of) the most important goal(s). The BiL DOT can offer that opportunity. The author accordingly used the BiL DOT in study 2 in order to collect multi-phase data and made between-phases comparisons in order to evaluate the potential impact of the Welsh language mentoring scheme on the prevalence of Welsh use.

Study 2: Evaluating the Effect of the Welsh Language Mentoring Scheme

Methodology

Participants

A separate cohort of staff from a different department to study 1 participated in this study. The author offered department X a workplace-based language mentoring scheme that encouraged and helped staff members to use more Welsh at work. The author, along with supervisor, Dr Lowri Hughes, and Eleri Hughes of Canolfan Bedwyr, introduced the scheme⁴³ and its interwoven observational research element to all staff ($n=22$) during one of their staff development days. All staff members agreed to participate in the mentoring scheme as either a mentor ($n=11$) or a mentee ($n=11$). The director of the participating department organised the mentor-mentee pairs: that the number of mentors and mentees is identical is coincidental. The author defined the fluency level of the participants in the same way as in Study 1 Participants (three of whom did not have a MailTip, which indicated that they did not have any Welsh skills: the author categorised these participants as non-fluent). Table 11 indicates the number of participants by their fluency level and their role on the Welsh language mentoring scheme.

Table 11

Number of participants by their fluency level and their role on the scheme

Role on Scheme	Fluency Level	
	Fluent	Non-fluent (no Welsh skills)
Mentor	11	0
Mentee	1	7 (3*)

Note. *The observations experience confirmed that the three participants that did not have a MailTip did not have any Welsh skills beyond basic greetings.

⁴³ See Study 3, Chapter 3 (mainly: The Welsh Language Mentoring Scheme) for information on the scheme as an intervention.

Measures

The author used the BilDOT (see Appendix A) to collect quantitative dyadic language use data *in situ* on a laptop.

Design

The author applied a naturalistic baseline-intervention-post observation design to this study.

Procedure

The author identified four places as observation points as well as suitable times in the workweek in consultation with the director. The author informed the director of the observation schedule on a weekly basis. The author was involved in collecting the entire dataset.

Ethical Considerations

The author obtained ethical approval from the university's relevant Ethical Committee (ref. 2017-15922) including participants' written informed consent that the author would collect data on their internal language of choice via observations (see Appendix G and Appendix H). The author did not collect data on the content of conversations. The author maintained the anonymity of the participants (and where they worked) in order to protect their identity.

Data Collection

The author conducted observation sessions for 2 hours each at consistent times on weekdays: 9:00am-11:00am, and/or 2:00pm-4:00pm. The author completed 32 hours of observations during the 2-week baseline, 80 hours during the 12-week intervention, and 76 hours during the 5-week post-test. The author followed the same data collection procedure used for study 1 for this study.

Inter-observer agreement (IOA).

Two observers⁴⁴ conducted eight of the 40 observation sessions during the intervention phase (a 20% IOA rate) in order to strengthen the validity of the data (Cooper et al., 2014). The observers' data matched at a rate of 96.2%.

Results

The dataset contained the percentage of time in which Welsh-Welsh conversations occurred per study phase per dyad ($n=228$). The author observed 3,745 dyadic conversations by 17 of the 22 participants that remained employed at the department throughout the entire duration of the study. The fluency level/scheme status of the employees that stopped working at the department at some point during the project timeline were as follows: One non-fluent mentee; three mentees without Welsh skills, and; one fluent mentor.

Data Analysis

Exploration of the dataset revealed non-normally distributed normality plots. Both normality tests (Kolmogorov-Smirnov and Shapiro-Wilk) revealed $p < .001$ values per study phase. The author accordingly deemed non-parametric analyses most appropriate. The author executed a Friedman Test in order to investigate potential differences between the percentages of time in which Welsh-Welsh conversations occurred across all study phases. To follow, the author executed a post-hoc Wilcoxon Signed Ranks Tests (with Bonferroni corrections of .0167 for significant values) in order to investigate a potential difference in the percentage of time in which Welsh-Welsh conversations occurred between (a) Baseline and Intervention, (b) Baseline and Post-test, and (c) Intervention and Post-test.

⁴⁴ The same observer that joined the author in study 1 also joined the author for this study.

Welsh-Welsh Conversations

The number and percentage of Welsh-Welsh dyadic conversations that the author observed during each study phase was as follows: Baseline, $n=696$, 12.41%; Intervention, $n=1501$, 23.89%; Post-test, $n=1548$, 23.26%. The Friedman Test revealed that the percentage of Welsh-Welsh dyadic conversations occurring across the study phases were significantly different, $\chi^2(2) = 25.99$, $p < .001$. The Wilcoxon Signed Ranks Test revealed a significantly higher percentage of Welsh-Welsh dyadic conversations being conducted during the intervention ($M=23.89\%$) as compared to the baseline ($M=12.41\%$), $T = 997$, $p < .001$, $r = -0.2$, and during the post-test ($M=23.26\%$) as compared to the baseline ($M=12.41\%$), $T = 482$, $p < .001$, $r = -0.2$. Whilst the percentage of Welsh-Welsh dyadic conversations occurring during the post-test was lower ($M=23.26\%$) than the intervention ($M=23.89\%$), this was not a significant decrease, $T = 1767.5$, $p = .479$, $r = -0.03$.

Discussion

In this study, the author sought to evaluate the impact of the Welsh language mentoring scheme on the prevalence of colleagues' spoken Welsh in a bilingual workplace. In essence, the director requested help to increase the internal use of Welsh at the department. The author accordingly offered the department a pilot of the Welsh language mentoring scheme. The author utilised the BilDOT to collect quantitative data on the staff's dyadic language use during multiple experimental phases. The author assessed their progress by conducting between-phases comparisons on their internal use of spoken Welsh rather than utilising traditional examination methods or official assessment in order to explore whether participating in the scheme achieved the staff's desired effect of increasing their internal use of spoken Welsh. The author analysed the data in order to explore a potential main effect of study phase on the prevalence of Welsh-Welsh dyadic conversations. The results suggested that the scheme significantly increased the prevalence of internal spoken Welsh. This supports the hypothesis that the prevalence of internal spoken Welsh would significantly increase as a function of implementing the Welsh language mentoring scheme.

The initial results of this study are encouraging. The percentage of time in which internal dyadic conversations occurred in Welsh increased. Statistical analysis revealed this to be a significant increase, i.e., there was a main effect of study phase on the prevalence of spoken Welsh. Welsh-Welsh dyadic conversations occurred for 12.41% of all conversations during the baseline as compared to 23.89% during the intervention. The author also compared baseline measurements to the post-test measurements in order to explore a potentially longer-term effect of the scheme on the prevalence of spoken Welsh. Welsh-Welsh dyadic conversations occurred for 12.41% of the time during the baseline and increased to 23.26% during the post-test phase. Thus, the prevalence of Welsh-Welsh dyadic conversations significantly increased as a function of having *previously* participated in the scheme. This

suggests that the scheme had a longer-term impact on the increased use of Welsh, which remained a part of the participants' language choice behaviours following officially ending the scheme.

The percentage for the post-test phase was not significantly different to its intervention phase counterpart. This is not necessarily a negative result. One positive to this relates to the IOA limitation, i.e., the author could only incorporate IOA into the intervention phase of this study due to practical reasons. However, that there was such a miniscule difference between the intervention and post-test values suggests that the presence of an additional researcher for 20% of the observation sessions during the intervention phase did not inflate participant reactivity (see General Discussion: see also Chapter 5 for a further discussion on participant reactivity). Future studies should endeavour to maintain consistency with IOA, i.e., include IOA for the same percentage of observation sessions across all experimental phases. Another positive is the lack of a statistically significant difference between the intervention and the post-test values. This suggests that officially ending the scheme did not revert the percentage use of Welsh towards baseline levels. The statistically significant difference between the baseline and the post-test values further supports this. This suggests that the impact of the scheme on the prevalence of spoken Welsh continued following officially ending the scheme. However, the data can only declare that this effect lasted until the end of the post-test phase. In order to understand the longer-term effect of language interventions, future studies should also incorporate a follow-up phase further down the line for comparison with the post-test values. The lack of a statistically significant difference between the post-test phase and the follow-up phase would more strongly suggest a language intervention's longer-term effect.

The informal, no-pressure approach of the scheme is a notable strength. However, it might simultaneously be one of its limitations. An unstructured approach that places no demands nor sets targets on behalf of the participants means that monitoring what the participants actually did within their mentoring sessions could not occur. Whilst the organisers of the scheme advised mentor-mentee pairs to meet a minimum of three times during the three months of the scheme's implementation (see Study 3, Chapter 3), how often each pair actually met is unknown. The scheme 'left the participants to their own devices', i.e., they self-governed how and when they would conduct the mentoring sessions, if at all. Therefore, the participants were not under pressure to achieve any dictated goals nor reach any dictated targets as set by others, e.g., the research team or the university's human resources department. To emphasise, therefore, the participants self-governed how much effort they invested in the scheme (if any) and set their own targets and/or achievements should they wish.

Despite the positive and encouraging results, it is not clear what elements of the scheme inflicted the staff's increased use of Welsh, i.e., according to the data, the use of Welsh increased as a function of the scheme. However, how or why remains unanswered. In order to understand how and what factors contribute to the increase in the use of Welsh in the workplace, future studies that evaluate the impact of language interventions should investigate which factors contribute to the intervention's success and/or failure, and how and why. The author has conducted a follow-up qualitative study in order to gather the participants' perceptions of the scheme and its effects on language behaviour (see Study 3, Chapter 3). However, none of the participants of study 2 was involved in Study 3, Chapter 3.

Collecting quantitative data during a follow-up phase for this study was not logistically possible given the department's regular staff turnover. However, many of the participants confided with the author their desire to increase their use of Welsh at work further than how the mentoring scheme helped. This conveyed their willingness to 'step up' from the mentoring scheme to something more exciting. This fortunately presented a convenient opportunity to pilot the ARFer programme (see Study 4, Chapter 4) within this department with some variety on the participants given the staff turnover, which occurred after finishing this study and prior to piloting the ARFer programme. Specifically, of the $n=22$ employees that participated in this study, five left their employment during the implementation of this study (see Results), and one employee (fluent mentor) left their employment after this study ended but before the ARFer programme started. Six new employees joined the department between ending this study and starting the ARFer programme.

General Discussion

The author debuted a naturalistic observation design in order to pilot the BiIDOT as a means to measure the linguistic behaviours of a small sample of employees (study 1). The author went one step further with study 2 by using the BiIDOT to collect the data during multiple experimental phases of a Welsh language mentoring scheme in order to evaluate its potential impact on the prevalence of between-staff verbal Welsh use. These two studies therefore made a small yet significant step to bridge an evident gap in the literature, i.e., the lack of systematic evaluation of the potential impact that implemented language interventions might have on language behaviour. Utilising and harnessing systemic methods in order to evaluate the impact that interventions might have on contributing to achieving the Cymraeg 2050 vision's (Welsh Government, 2017) strategic priority of increasing Welsh use is of utmost importance. One option is to use the BiIDOT to collect quantitative verbal language use data *in situ* via objective observations, rather than relying on retrospective and subjective self-reports. The results of these two initial studies advocate the BiIDOT as a practical measure to gather evidence that is more robust on a language intervention's behavioural impact.

An independent observer accompanied the author for 20% of the observation sessions in both studies (IOA: only in the intervention phase for study 2⁴⁵). These data matched at a rate of 83.5% for study 1 and 96.2% for study 2. Whilst these two values differ by 12.7 percentage points, the author does not believe that the lower IOA rate of study 1 is a limitation of the data collection process. Firstly, the independent observer was seeing and using the BilDOT for the first time in study 1 and had not been involved in the design of the BilDOT. Prior to the six IOA sessions in study 1, the independent observer shadowed the author in one observation session in order to see first-hand how one was to use the BilDOT. Therefore, the author did not necessarily put the independent observer through any extensive training. Rather, the independent observer adopted a 'learn by doing' approach after shadowing. Secondly, as Cooper et al. (2014) state, the expectation is for independent observers to match at a rate of "no less than 80%" (p. 140). Therefore, that the independent observer managed to get to grips with using the BilDOT without extensive training or practice and collect data at a rate above the 80% threshold is testament to the usability and practicability of the BilDOT. Thirdly, the independent observer used the BilDOT in other studies that did not involve the author between the timelines of study 1 and study 2, and during the timeline of study 2. As such, when the time came for the independent observer to join the author in study 2, the independent observer was much more experienced at using the BilDOT. This might have contributed to the higher IOA rate of 96.2% in study 2 as compared to the IOA rate of 83.5% in study 1.

⁴⁵ The independent observer was not able to join the author during all study phases in study 2 due to having other commitments in other self-sustained observations-based projects.

However, as with self-report procedures, observing is not without limitation, e.g., participant reactivity. The literature commonly refers to this phenomenon as the *Hawthorne Effect* (Shaffer & Kipp, 2010), which posits the risk of participants behaving differently to their usual manner due to knowing they are under observation (see for e.g., McCambridge, Witton, & Elbourne, 2014). In the interest of being fair with the participants of both studies, and to conform to research ethics, the author informed the participants of intended visits. A possible consequence of this is that they *prepared* themselves for the visits. This might have subsequently influenced their behaviours prior to the visits, i.e., informing the participants of intended visits could *cause* reactivity. However, research suggests that establishing rapport and building trusting relationships with participants (see for e.g., Oswald, Sherratt, & Smith, 2014) can mitigate the Hawthorne effect. For example, the author always arrived early to observation sessions in order to conduct small talk with the employees in an attempt to shift their focus away from the primary reason for being present. It is plausible that this lowered the possibility that the staff thought about in which language they *should* speak in response to the presence of the author. The author also conducted small talk with the participants prior to leaving at the end of each observation session. These steps among others could have contributed to minimising the Hawthorne effect. Despite participant reactivity causing concern, developing measures such as the BiLDOT⁴⁶ offers a truly innovative approach to directly collect data on language behaviour and subsequently assess the impact of language-driven interventions in bilingual contexts, e.g., the Welsh language mentoring scheme.

⁴⁶ One must consider the fact that the author did not test the BiLDOT prior to conducting study 1, e.g., in a lab/ other artificial setting or by piloting it elsewhere, as a limitation to the general development of the BiLDOT. In addition, the author has not conducted validity, feasibility, nor reliability tests on the BiLDOT. Whilst this is certainly a direction in which to take in order to develop the BiLDOT, it is important to emphasise here that the experience of using the BiLDOT in these two studies, and in Study 4, Chapter 4, demonstrated that the BiLDOT was an useful and practical measure for collecting dyadic language choice data in a real-world, bilingual workplace context.

The current data collecting capabilities of the BiLlDOT enabled the author to find some interesting behavioural patterns within the raw datasets across the two studies. Visual inspection of the raw dataset revealed specific participants repeatedly trying and failing to switch a conversation from English to Welsh with other specific participants. This attempt deteriorated with time and eventually lead to giving up after a certain amount of failed attempts. For example, the author observed one mentor in study 1 attempting and failing to switch the conversation from English to Welsh with their designated mentee (who, of course, wanted to make more use of Welsh since they had registered as a mentee) five times within their 101 observed conversations. The author observed this three times within their first 11 language incidents and did not observe them re-attempt this again until their 44th conversation, with one final attempt during their 86th conversation. This suggests that some participants tried to switch their regular conversation language with others from English to Welsh. It is however possible that the other interlocutor found it difficult to behaviourally respond and make a language switch ‘just like that’ if English had been established as the norm and had become an ingrained part of their dyadic relationship. This reiterates a phenomenon that has already emerged in this thesis, i.e., that changing language habits is not easy (which this thesis refers to as the linguistic habit context) and supports other works that have referred to this difficulty (see for e.g., Altuna & Urla, 2013; Evas & Morris, 2017; Jauregi & Superbiola, 2015; Jones & Morris, 2007; Pujolar & Puigdevall, 2015; Thomas & Roberts, 2011). Future studies could explore the persistence factor as regards attempting to influence an interlocutor’s language choices, i.e., when would they decide to give up, and why. This could then open the door to explore what elements need to be in place in language interventions for prolonging this persistence in people’s efforts, and what elements need to be in place in order to boost a language switch by their interlocutors. It is also possible that the topic of conversation was too complicated/technical for some participants of these studies to

feel confident enough to respond in Welsh. However, the development stage of the BilDOT at the time of implementing these two studies did not allow the author to collect conversation content data. Therefore, the question of whether the level of complexity/technicality contributed to the participants in these two studies shying away from responding in Welsh is unknown. However, future research should go in this direction by developing the BilDOT.

Further research is also required to allow comparisons between bilingual workplaces with a mixed linguistic composition. Other workplaces might employ more non-fluent individuals than fluent individuals and this might provide different linguistic behavioural trends. Observing a different workplace with staff that have a similar mixture of linguistic capacities could also reveal different linguistic behaviours. This would offer the opportunity to explore the influence of the workplace environment further as well as factors such as the staff's personal relationships, the manager's leadership level, etc. on internal language choice. This would contribute to the evidence base concerning what sort of mixture of workers would be optimal in order to promote and facilitate Welsh use in the bilingual workplace context. Hand in hand, future research should be much more nuanced and detailed in defining the language profile/linguistic composition of workplaces (see Language profiling).

**Chapter 3, Study 3: Staff Perceptions of a Language Mentoring Scheme: A Qualitative
Analysis**

Abstract

As a process, mentoring has the potential to help others develop and achieve targets. As such, organisations have implemented mentoring schemes in order to encourage the internal use of a minority language. However, evidence is lacking in terms of the impact of language mentoring on both language development and actual language use. This qualitative study aimed to gather evidence on the potential impact of the Welsh language mentoring scheme on language behaviour via interviewing (semi-structured) participants ($n=25$) and conducting a thematic analysis. The author identified three main themes within the dataset: (1) changing language is difficult, (2) benefits of scheme, and (3) limitations of scheme. The testimonies of the participants indicate why such schemes are needed at the outset. The data suggests that participants valued the informal demeanour of the scheme. As such, they did not feel under pressure to achieve set targets. Due to these elements, participants believed that the scheme helped develop their Welsh skills and, subsequently, increased their confidence, which in turn increased their use of Welsh. On the other hand, the data suggests that the scheme lacked encouragement, structure, and guidance. A discussion on the implications of these results in the context of developing language mentoring schemes and other language interventions form the conclusion of this chapter. The results of this study has the potential to make a significant contribution to the goal outlined in the Cymraeg 2050 strategy in terms of increasing Welsh use in workplace settings.

Keywords: minority languages, language mentoring, bilingual workplaces, changing language is difficult.

Introduction

The use and popularity of ‘mentoring’ as a means to help others develop (Dreher & Cox Jr, 1996) has recently expanded (Beevers & Rea, 2010). Mentoring as a process typically pairs a mentor with a mentee. The mentor would simulate a safe learning space and would be responsible for supporting (Chao, 1997; Ostroff and Kozlowski, 1993) and guiding (Wright & Werther, 1991) their mentee. Mentors also accept the responsibility of being role models (Hunt & Michael, 1983; Kammeyer-Mueller & Judge, 2008) and a ‘critical friend’ to mentees (Kram, 1985). Thus, mentor behaviour can influence mentee behaviour (Beevers & Rea, 2010). In the workplace, mentees can observe their mentor’s behaviour or performance level at a certain task and imitate or exceed that in their own behaviour or performance levels. Generally, mentoring is voluntary and conveys genuine desire to fulfil the mentor role and help others develop (Dreher & Cox Jr, 1996). Mentee perceived confidence levels for certain behaviours could increase as a result (Eraut, 2007).

There is an expectation that mentors encourage mentees to behave in a specific manner in the workplace (Chao, 1997). Given this, a number of institutions have adopted mentoring as a means to encourage the use of a minority language within the bilingual workplace⁴⁷ (Aberystwyth University, 2014; Cwmni Iaith Cyf., 2001; Estyn, 2004; Evas, Mac Giolla Chríost, & Williams, 2014; Fairhead, 2015; Gruffudd & Morris, 2012; Gwynedd Council, 2016; Jones, Eaves, & Ioan, 2010; Thurston, Greenall, & Sarasin, 2012; Vivian et al., 2014; Welsh Assembly Government, 2007; Welsh Government, 2020). Mentors could encourage mentees to make more use of their minority language skills in the bilingual workplace context. Given that the mentor role is voluntary, mentors might be willing and ready to make a commitment (which is one of the principles of MINDSPACE: Dolan et al.,

⁴⁷ For examples of mentoring beyond workplace contexts, see Macintyre, Burns, and Jessome (2011); McEwan-Fujita (2010). See Chrisp (2005); Evas and Morris (2017); Welsh Language Board (2009) for examples of callings for the implementation of language mentoring.

2010) to the scheme's aim of helping colleagues increase their confidence and ability to use their minority language skills in the workplace (see Chapter 1 for more on the principle of commitment).

Voluntariat per la llengua (the language volunteer programme: Sanz, Nadal, & Sanz, 2014) is a Catalonia government-run scheme. *Voluntariat* pairs individuals to provide opportunities for them to use their Catalan skills for 1 hr a week over 10 weeks in a natural, informal context (Anna, 2009). Though not specifically focussed on the workplace, *voluntariat* has been active since 2002 with specific focus on targeting 'new' Catalan speakers. The programme aims to help learners and new speakers of Catalan gain self-confidence through practising using Catalan. Its growth from recruiting 19 pairs in 2002 to recruiting 11,653 pairs in 2018 (with over 135,000 pairs overall since its creation: see Generalitat de Catalunya, 2019) suggests that it is at least effective in terms of recruitment.

Voluntariat focuses on fluent Catalan speakers who provide help and support to new Catalan speakers/Catalan learners. Evas and Morris (2017) describe the former as being mentors to the latter, i.e., a mentor-mentee pair. Whilst 99.75% of the participants recommend the programme (Generalitat de Catalunya, 2019), robust data on whether it increases the participants' actual use of Catalan in the real world is scarce. The author found one English language published example that vaguely references the programme in terms of increasing the participants' use of Catalan (Camardons, Castaño, & Díaz, 2005). Evas and Morris (2017); Gruffudd and Morris (2012); Welsh Government (2017), for example, suggested that a programme such as voluntariat could work in helping people use more of their Welsh skills. A new pilot project launched in January 2018, namely *Siarad* (still in place at the time of writing), refers to voluntariat as its inspiration (Learn Welsh, 2018).

The Welsh Language Mentoring Scheme

A university in Wales piloted a similar programme to voluntariat, namely the Welsh language mentoring scheme, with three departments between summer 2015 and spring 2017. The author asked all staff at each department if they were interested in being voluntarily involved in a three-month pilot scheme aimed at helping staff who wanted to use more of their Welsh skills at work, i.e., mentees, by pairing them with a colleague who could help, i.e., a language mentor. The author asked participants to commit to arrange their mentoring sessions so that mentees could practice Welsh informally with their mentors and ask questions regarding any aspects of Welsh with which they might struggle. The research team did not arrange the mentor-mentee pairs.

The author set a minimum target for the pairs to meet three times per month, with each mentoring session lasting a minimum of 1 hr. However, the author clarified that the pairs were free to meet as often as they wished depending on the unique circumstances per pair and availability of each member of the pair. The author emphasised that the participants chose their discussion topics: they were not restricted to discuss only work-related matters. The author also did not set any targets for the participants (as was the case for voluntariat), i.e., the mentees were free to decide what exactly they wanted from the scheme, e.g., to send more emails in Welsh, to be able to contribute to formal meetings through Welsh, and so on. The author therefore suggested that mentors commit to set challenges to their mentees, based on their mentees' conveyed desires, so that the mentees had something to aim to achieve prior to attending mentoring sessions.

The author emphasised that the mentor role did not emulate a language tutor. Rather, mentors were a dedicated individual to whom their paired mentee could feel safe to turn for guidance. However, given the flexibility of the scheme, capable mentors could operate as language tutors should this be a mutual desire within the pair. For more information, see Appendix I for a guidance booklet⁴⁸ given to the participants.

⁴⁸ The research team was not involved in creating this booklet.

Study Aims

This chapter has referred to previous work that mentions the implementation of a language mentoring scheme in workplace contexts and beyond. However, there is a dearth of robust evaluation of their impact. As such, the aim of this current study was to collect and analyse the perceptions of participants of the Welsh language mentoring scheme. This current study was therefore a qualitative exploration of the scheme's potential impact on the participants' language behaviour. Of the three departments that piloted the scheme, this current study focuses on the first two departments that chronologically took part, including the department referred to in Study 1, Chapter 2 (after finishing observations). The department involved in Study 2, Chapter 2 was not involved in this current study. The general aim of this current study was to gather the respondents' thoughts on the scheme in order to explore whether it helped them use more of their Welsh language skills at work.

Methodology

General Method

The target population for this study were participants in two pilots of a Welsh language mentoring scheme ($n=35$) at a university in Wales. The author utilised a mixed-methods approach (questionnaire and semi-structured interview) in order to explore the scheme's potential influence on the respondents' language behaviour. However, this current study focuses only on the interview (a separate in-prep manuscript will discuss the questionnaire aspect).

The two departments did not pilot the scheme simultaneously (department A, September-December 2015; department B, July-October 2016). The author made changes to the semi-structured interview schedule during and between these implementations based on what respondents from department A shared during their meetings and the lessons learned during the process.

Respondents

The author (hereafter referred to as the interviewer) invited all employees who had enrolled on the scheme from department A (mentor, $n=10$; mentee, $n=11$) and department B (mentor, $n=5$; mentee, $n=9$) to participate in this study via private emails (department A, see Appendix J; department B, see Appendix K). Twenty-five individuals responded positively and subsequently volunteered for this study (see Table 12). The interviewer used the language that each employee used to reply to the original bilingual email for all further correspondences.

Table 12

Number of volunteers for this study per department based on their role on the scheme

Department	Role on the Scheme	
	Mentor	Mentee
A	5	6
B	5	9

Ethical Considerations

The relevant university ethics committee ethically approved this study (department A, ref. 2016-15594; department B, ref. 2016-15773-A13953). The interviewer sought the respondents' written informed consent to use and analyse their data (including audio recording during the interview⁴⁹). All respondents had the right to withdraw their consent to any part of the study at any time (including refusing to answer any questions) without needing to provide a reason. Participation could not lead to any negative outcomes.

⁴⁹ Two respondents did not consent to record the interview.

The interviewer protected the identities of both departments and protected the identities of all respondents by replacing their real names with pseudonyms. The interviewer transferred all interview audio recordings from the interviewer's encrypted personally owned smartphone to the interviewer's encrypted institution-supplied laptop: only the interviewer had access to listen to the audio files.

Materials

The interviewer used information sheets, consent forms, and semi-structured interview schedules to facilitate this study.

Department A.

The mentors' information sheet (see Appendix L) differed slightly to the mentees' information sheet (see Appendix M). The consent form (see Appendix N) was identical for mentors and mentees.

Mainly seeking the respondents' feedback regarding the scheme, the interviewer asked 11 questions to the mentors and 12 questions to the mentees. The interviewer omitted question eight in the interview schedule for mentees (see Appendix O) from the interview schedule for mentors (see Appendix P) given that it was unsuitable for the mentor role.

Department B.

All the paperwork for mentors and mentees were identical (information sheet, see Appendix Q; consent form, see Appendix R; interview schedule, see Appendix S).

The interview schedule.

Based on the learning that occurred during meetings with respondents from department A, the interview schedule differed considerably between the departments (department A mentee, see Appendix O and department A mentor, see Appendix P; department B, see Appendix S). The interviewer added a framing section to read to respondents from department B in order to share some background information and to facilitate an informal and relaxed environment. The interviewer also asked double the number of questions to the respondents from department B ($n=25$, taking questions out of the questionnaire) as compared to the respondents from department A (mentor version, $n=11$; mentee version, $n=12$).

The interviewer improved the organisation of the interview schedule for respondents from department B (see Appendix S) as compared to its department A counterparts (mentees' version, see Appendix O; mentors' version, see Appendix P). Following the framing section, the interviewer added a general question to encourage respondents to share similar information included during the framing process. Three different sections followed: general questions ($n=10$), workplace-specific questions ($n=7$), and scheme-based questions ($n=7$). Referring to the interview schedule for the mentees from department A (see Appendix O), the interviewer shifted questions 1, 2, 3, 4, and 12 to the scheme-based section in the schedule for department B. The interviewer shifted questions 5 and 10 to the general questions section, and questions 6, 7, and 8 to the workplace-specific section. The interviewer did not include question nine that was included in the interview schedule for department A mentees (see Appendix O) in the interview schedule for all department B respondents (see Appendix S).

Procedure

The interviewer invited all employees from both departments who participated in the scheme ($n=35$) to participate in this study via private individual emails. The interviewer arranged and conducted all one-to-one meetings ($n=25$) during working hours in a private room.

Department A.

At the beginning of each meeting, the interviewer sought the respondent's verbal language choice in the language that they had established over emails, i.e., "*A fyddai'n well gennych chi imi siarad Cymraeg neu Saesneg?*" / "Would you prefer if I spoke Welsh or English?". The interviewer did not change language unless a respondent requested so. Meeting duration varied between 30 min and 1 hour. Table 13 indicates the language chosen by each respondent to respond to the recruitment email, speak to the interviewer, read the information sheet and consent form, complete the questionnaire, and conduct the interview.

Table 13

Language (W = Welsh; E = English) used by each respondent from department A for different elements of the study

Respondents	Study Elements				
	Respond to Invite	Speak to the Interviewer	Info & Consent	Complete Questionnaire	Interview
Elin ^a	E	E	E	E	E
Gemma ^a	W	W	W	W	W
Carl ^b	E	E	E	E	E
Idwen ^b	W	W	W	W	W
Lisa ^a	E	E	E	E	E
Morgan ^c	W	W	W	W	W
Enid * ^d	W	W	W	W	W
Llinos * ^d	W	W	W	W	W
Dylan * ^c	W	W	W	W	W
Sharon * ^d	W	W	E	E	W
Meira * ^b	W	W	W	W	W

Note. * = mentors. The author has replaced all respondent names with pseudonyms in order to protect their identities. ^a = the paired mentor for these mentees did not take part in this study. ^b & ^c = paired mentor-mentee(s). ^d = the paired mentees for these mentors did not take part in this study. Sharon mentored three mentees.

The interviewer followed with a verbal explanation of the study, which included the standard procedure of distributing an information sheet (mentors' version, see Appendix L; mentees' version, see Appendix M) and requesting the respondents' written informed consent to participate (see Appendix N). These documents were separately available in Welsh and English.

The interviewer introduced the first part of the interview and reiterated to the respondents the importance of responding honestly and that they could not provide incorrect responses. To follow, the interviewer sought the respondent's permission to begin audio recording, which commenced if the respondent consented⁵⁰. With the exception of one respondent⁵¹, respondents did not see the interview schedule. The interviewer stopped recording and closed the meeting after the respondent had answered/chosen not to answer the final question.

Department B.

Whilst department B was participating in the scheme, the interviewer naturalistically observed internal language behaviour at the department (see Study 1, Chapter 2). This was not the case for department A. Since eight of the 16 observed employees from department B participated in the scheme in Study 1, Chapter 2 (mentor, $n=4$; mentee, $n=4$) also participated in this current study, the interviewer had met and established a set language with them during observations (Table 14 identifies these eight that participated in both studies).

With the remaining six respondents from department B (whom the interviewer did not observe during Study 1, Chapter 2), the interviewer sought their preferred verbal language as a first step. The interviewer followed the same procedure as described in Department A. The duration of the meetings varied between 1 hour 30 min and 2 hours. See Table 14 for the language used by each respondent for each of the study elements.

⁵⁰ Two respondents (mentor, $n=1$; mentee, $n=1$) did not consent to audio recording. The interviewer made written notes of their responses.

⁵¹ This respondent (mentee) insisted on conducting the interview in Welsh. However, as a precaution, requested the English schedule be visible.

Table 14

Language (W = Welsh; E = English) used by each respondent from department B for different elements of the study

Respondent	Study Elements				
	Respond to Invite	Speak to the Interviewer	Info & Consent	Complete Questionnaire	Interview
Lowri * + ^a	W	W	W	W	W
Caryl * ^b	W	W	W	W	W
Lee ^b	W	W	W	E	W
Nia ^b	E	E	E	E	E
Manon * + ^c	W	W	W	W	W
Bryn * + ^d	W	W	W	W	W
Bethan * + ^e	W	W	W	W	W
Carwyn + ^c	E	E	E	E	E
Rhiannon + ^e	W	W	E	E	W
Sandra + ^d	E	E	E	E	E
Catrin ^b	W	W	E	E	W
Emily + ^a	E	E	E	E	E
Hannah ^b	E	W	E	W	W
Sara ^b	W	W	E	E	W

Note. The author has replaced all respondent names with pseudonyms in order to protect their identities. * = mentors. + = the interviewer observed these participants in Study 1, Chapter 2.

^a & ^b & ^c & ^d & ^e = paired mentor-mentee(s).

Data Analysis

The interviewer transcribed the recorded interviews verbatim and applied an inductive thematic analysis to the transcripts to find “patterns of meaning across a dataset in relation to a research question” Braun & Clarke, 2014, p. 175) in order to describe the dataset in detail (Braun & Clarke, 2006). Repeated reading and making notes on the transcripts revealed patterns (themes) related to the research area or of specific interest to the researchers. To follow, the interviewer created individual respondent themes tables consisting of every quote that corresponded with each theme. The interviewer created a master themes table consisting of every quote that corresponded with each theme from all respondents prior to a team meeting. The research team discussed the analysis process and progress in said meeting, which led to the interviewer creating the final master themes table.

Results

The thematic analysis revealed three main themes: (1) changing language is difficult, (2) benefits of scheme, and (3) limitations of scheme. As with Table 13 and Table 14, the author has replaced all respondent names, in addition to any fellow mentoring scheme participants to which any responders referred, with pseudonyms in all quotes in order to protect their identities. Brackets within quotes signify additional information that the author has added into the text in order to clarify to what the respondent is referring. The inclusion of a bracketed ellipsis within a quote signifies that the author has removed an irrelevant part of the original quote: a non-bracketed ellipsis signifies a longer pause in the speech.

The author has translated quotes that derived from interviews conducted in Welsh to English and has italicised them in-text for this English version of the chapter. The original Welsh quotes are available in the Welsh version of this chapter.

Theme 1: Changing Language is Difficult

“It’s hard to change language with someone” (Gemma, mentee). Many of the respondents supported what has already emerged in this thesis, i.e., the difficulty of changing from one language to another language. The author found examples within the dataset as to why this was the case. For example, attitude towards changing language:

“someone that’s that close to being, what I’d describe as a Welsh speaker you know um, what I felt was if you cannot get someone like him [Morgan, designated mentee] to use Welsh, well you’ve got a bit of a task then to get someone that’s beginning to learn the language [to use the language]” (Dylan, mentor).

“when someone has, agreed to be involved in a project like this and then when you try you know to get them to speak [Welsh] and they say they definitely won’t, I don’t know where you go from there” (Sharon, mentor).

One’s ability in the language in which one is attempting to change also emerged as a factor for why it is difficult to change language. For example:

“I have lots of friends that are Welsh speakers but they won’t speak Welsh to me [...] it’s difficult to find people to, that are happy to speak [Welsh] to learners” (Gemma, mentee).

Familiarity with interlocutor was also prominent within the dataset. For example:

“with um people I’ve um known for years so English is just the established language so uh yeah the problem with established” (Lee, mentee).

“maybe I’ll be more challenging with Sandra [designated mentee] because we’ve um you know we’re familiar with each other over the years in a way in a way maybe it would be more difficult to change than it would be with someone uh, that comes in from outside you know what I mean, to an extent?” (Bryn, mentor).

However, the most prominent reason echoes the notion that once people have established a language as a habit, breaking that habit is not easy due to the difficulty of shifting the linguistic habit context (LHC).

Linguistic habits are not easily broken.

Despite aspiring to use more Welsh, making the switch from habitually using English is not easy. One mentee (Gemma) provided a great summary:

“I want to speak Welsh all day, every day, but he [designated mentor] said said no, it’s not possible, it’s too hard. It’s too hard for him, I think, because we’ve been working together for 15 years and we’ve been speaking English the whole time, so it’s hard to to change language, um, but, so he said oh we’ll speak in Welsh for one hour a day, but this was also hard”.

This suggests that using Welsh for just one hour a day is difficult if people have already established a different language. One mentor (Dylan) offered an explanation as to why:

“I’m friends with him [Morgan, designated mentee] too so you know which doesn’t always make things easy because you’ve started, you’ve started this relationship with someone so you know what I mean you’ve started with that first language it’s, um it’s artificial in a way then if you flip to something just for an hour on a Friday afternoon”.

The simple explanation of ‘just being difficult’ in terms of changing language was a clear theme within the dataset. Respondents were even aware of this establishing at the beginning of getting to know someone, talking as though they were trying to teach the interviewer about the LHC. For example:

“it all comes down to, at the very very beginning cos it’s im- almost impossible to change it [language] after that because you’ve started a relationship with someone and the relationship is defined by that language, and to then try and change it would just change the relationship, it would mean like starting again almost” (Carwyn, mentee).

“my wife’s um, uh bilingual and you know her Welsh is very good, but she says that she still speaks to some of the school friends in English because that was the first language they started speaking in, and a lot of other people say the same sort of thing they find doing that flip is almost impossible because you just get used to using that same language and then it’s just, is weird uh afterwards” (Carl, mentee).

Some respondents suggested that making that change is awkward or weird, and that this is why it is so difficult. For example:

“I was trying [to change language] um with one person but it’s just, it’s it’s fixed in uh yeah in English, so but I’m trying [to change language] but uh it’s hard [...] I feel a bit awkward because it’s just the language is changing and she also feels a bit awkward because the language is changing” (Lee, mentee).

“When switching languages with somebody who you’ve always always always spoken English to and then all of a sudden you discover that they’re a Welsh speaker it is still weird to speak Welsh to them even though you know, yeah” (Nia, mentee).

“Just being with somebody that you’re used to speaking English with and then suddenly [use Welsh] was quite um difficult to sort of get used to [...] I’ve spoke with somebody about [this] before it’s that um, difficulty to overcome um the language you initially start speaking with some- somebody and to change that to change there’s the behaviour change thing you know and um I find that really difficult cos it it’s just odd” (Sandra, mentee).

This seemed to be a collective awareness amongst the respondents. For example:

“it comes down to habit I thought it was odd speaking Welsh with someone [when English was the established language] because you make that attachment oh like this is the language I speak to you, there’s got to be something psychological there” (Manon, mentor).

“A lot of it’s also to do with which language you started speaking to them I think because for example Carwyn and Rhiannon [mentees on the scheme], he I’d worked here for at least a year before I knew that they could maintain a conversation in Welsh and then the pattern was formed because I didn’t work as closely with them as I do now compared to when I started working here, um so I think that’s then made it harder to change language” (Lowri, mentor).

One respondent (Emily, mentee) even spoke about this from someone else's perspective:

“guy I worked with for years before I got this job um [...] Welsh speakers would come in who he'd worked with for years and speak to him in English and leave, and I was like how come you two don't speak Welsh because you're both Welsh speakers, and he was like because the first time we ever spoke to each other we spoke to each other in English, and so we, we basically established that language and we never, and I was like isn't that bit of an elephant in the room and he was like it's just how it is, once you've established that language you never switch”.

Theme 2: Benefits of Scheme

A no pressure, informal approach.

Respondents felt that the scheme's flexibility and informal demeanour was one of the scheme's key strengths:

“it [the scheme] wasn't too formal, and there's something nice about that that it's not too formal” (Sharon, mentor).

“I like the flexibility and that we um say we're going for a cuppa or whatever” (Enid, mentor).

One mentee (Morgan) elaborated on having enjoyed going with his mentor:

“for a coffee and just talk for an hour wholly in Welsh with someone, um and there was no pressure [...] [we] just spoke about football or films or something it was it was good for me to practice speaking in Welsh”.

This was on par with something that Morgan's designated mentor (Dylan) said:

“you felt as if you did something right just by talking about football and films”.

The respondents seemed to like not being under pressure to make heavy commitments or reach certain targets, e.g., pass an exam or attend formal courses/classes, as part of the scheme. For example:

“it’s [the scheme] kinda nice just as it is in that it’s not putting any pressure on you to achieve anything, and you do feel like you are achieving something just by keeping your hand in” (Elin, mentee).

Another respondent “enjoyed just having a rather informal chat” (Catrin, mentee).

Enjoyed participating.

Respondents expressed that they enjoyed taking part in the scheme. For example,

Enid (mentor) enjoyed:

“discussing with the staff and seeing them um having fun doing it [...] I said something in Welsh do you have a teabag or milk [...], general things like that like that it’s, a little bit informal but that it’s fun too”.

Another respondent said:

“it [the scheme] just feels like, fun there’s no exam at the end of it you’re not working towards anything you’re just, talking” (Elin, mentee).

This also suggests that taking part did not put the participants under pressure. One mentee (Gemma) was convinced that *“it’s [the scheme] been, just, great for everyone I’m sure”.*

Helped Welsh development.

When asked what she had enjoyed during the scheme, Sharon (mentor) said that she had enjoyed *“seeing the, person [designated mentee] treading further with their Welsh”.*

Another respondent highlighted that she really enjoyed:

“meeting with Carwyn [designated mentee] and speaking Welsh to him it’s like it’s really nice what I’ve enjoyed most is seeing his development [...] little things like that have been nice or seeing how much he’s improved [with his Welsh]” (Manon, mentor).

Another respondent said that her designated mentee:

“really did ask oh what’s the word for that and I really enjoyed that cos I could see there’s actual, learning happening” (Caryl, mentor).

Mentees also highlighted the scheme’s impact on their Welsh development. For example:

“there was a lot of, progress, for me, and, it was great just, um to tread further” (Gemma, mentee).

Another mentee (Carl) said, “I think I’m getting better and I I think I’m improving”. When the interviewer asked Carl if that was due to the scheme, Carl simply replied with “yeah” and, referring to a meeting that he had recently attended, Carl said that:

“the whole session was in Welsh, and I surprised myself to be honest that I was able to actually get through it, um in a group of strangers, you know, speaking about something uh totally in Welsh”.

This example testifies the scheme’s positive influence on Welsh development. Another mentee (Morgan) suggested that the scheme increased his confidence and willingness to use Welsh more often:

“if someone speaks Welsh to me, I don’t like run away and put my head down and wait for someone else to answer uh no I’ll answer and I’ll speak Welsh, so yeah I have it’s [using Welsh] more natural to me now”.

When the interviewer asked Nia (mentee) what she had hoped to achieve by taking part, Nia wanted “to have more conversations [in Welsh] and get a bit more confident a bit quicker”. In response to the interviewer asking Nia whether she had achieved any of her goals:

“yeah definitely I was definitely more confident [...] I felt more confident I did feel like I was able to formulate what I wanted to say and get it out in a whole conversational speed”.

The scheme seems to have positively influenced Welsh development for mentees in general, specifically their confidence to have a go at using Welsh.

Increased confidence in Welsh.

According to many of the respondents, the scheme increased their confidence in Welsh. For example:

“we’ve [Catrin and her designated mentor] met four times now not just the three, um cos we enjoy it and it raises my confidence a bit” (Catrin, mentee).

Further into the interview, Catrin said:

“I feel a little bit more confident [to use Welsh], and that’s why I want to carry on [with the mentoring scheme] without sliding back again”.

Another mentee (Nia) said:

“we had conversations [in Welsh] that I never thought I’d be able to have at the level that I was at so yeah we did have, it [the scheme] boosted my confidence”.

This suggests that the scheme, through the provision of a mentor, was directly responsible for increasing Nia’s confidence level (for example) in Welsh. The mentors also noticed the positive effect that the scheme had on Welsh confidence levels. For example:

“I felt at the end that the person I had [as a mentee] was now, you know more confident and, you know he himself said that to me which naturally raised your spirits” (Dylan).

One mentee (Carwyn) suggested that the scheme was so effective in raising his confidence level in Welsh that mentees could then help each other and not solely rely on the mentors:

“we’ve both [Carwyn and Rhiannon, fellow mentee] got more confidence to help each other otherwise before I’d have asked Lowri [a mentor on the scheme], but now I’ll give it a go yeah, and she [Rhiannon] does the same”.

Increased Welsh use.

In response to the interviewer asking, “*did the scheme have any positive effects on you?*”, Rhiannon (mentee) said:

“*yes I think because, um it’s made me start to try to speak Welsh more*”.

Morgan (mentee) said, “*I use more Welsh now*” and Carl (mentee) said:

“I would be speaking less Welsh, if um, if I wasn’t using it you know if I wasn’t part of the scheme”.

When the interviewer asked Sara (mentee), “*to compare, before the scheme and then during and after the scheme, are you using more Welsh?*”, Sara said that:

“*during the scheme I used a bit more Welsh I think yeah [as compared to before] and because I think about the scheme then I use a bit more Welsh so that was a help, yeah*”.

Sara went on to suggest that:

“the advantage of having a scheme like this is that it does by raising your thinking about it or making you think about it therefore makes you try to use the [Welsh] language a bit more”.⁵²

⁵² Sara switched to English during the interview.

Some respondents gave examples of observing others changing their language behaviour in favour of Welsh. For example, Lowri (mentor) said:

“some [people] um especially Carwyn and Manon [a mentor-mentee pair] speak more Welsh together because of it [the scheme]”.

Carl (mentee) also spoke along similar lines:

“we just spend much more [time] than we used to, you know, rather than um, just um people just instantly speaking English together they’ll try in Welsh”.

This was also the case within the mentoring relationship. For example, one mentor (Sharon) that happened to have multiple mentees claimed that *“they [mentees] use tend to use the [Welsh] language a little more now than they did before”*. This suggests that the scheme played a significant role in implementing this change, and that this effect persisted beyond the set three-month project timeline, as Sharon elaborated that:

“with one [mentee] I speak more and more Welsh, so it has continued even though the project has finished [...] uh we still, speak in Welsh when we are together”.

Sharon also made a broader suggestion:

“attitude in the workplace is changing, people [are] starting so say bore da and stuff, [there is] much more use of Welsh”.

One mentee (Idwen) said:

“I’ve seen that things have changed and that she [colleague] uses more Welsh we use more Welsh”.

Idwen gave another example:

“I’ve changed things, sometimes with success and sometimes not so I try sometimes, so I changed from English to Welsh with [colleague] and he’s, answered in Welsh so we now speak Welsh to each other”.

The scheme increased confidence amongst the participants to try to use Welsh and possibly the willingness/readiness to do so in addition to an increase in their use of Welsh. For example:

“Rhiannon [fellow mentee] as an example of someone I work with, so we do now confer more on, on Welsh if we’re if I’m stuck with Welsh translate Rhiannon what’s your opinion on this what’s your take on this how can I translate this or does this make sense can you come and read this email” (Carwyn, mentee).

Complete switch to Welsh.

Whilst the above quotes suggest that the scheme increased the use of Welsh among the participants, some clarified that their use of Welsh had replaced their previous habit of using English. This suggests that the scheme was the most significant factor that contributed to this linguistic shift. For example:

“I have been learning [Welsh] for a long time, but just since the Welsh language mentoring scheme I have tried to switch my language with some colleagues” (Gemma, mentee).

Despite Gemma then saying, *“I had hoped to speak Welsh all day with... all of each of my colleagues. But, this has not happened”*, she said that she *“speaks Welsh with, two of my colleagues, all the time now”*, and that *“therefore, it [the scheme] has been half um successful”*. Another mentee (Idwen) said:

“she [colleague] has now switched to speaking Welsh with me all the time where where we can, so that’s good”.

When the interviewer asked Sharon (mentor), *“have you done it [change] completely, change from English to Welsh?”*, Sharon said:

“yes with, I’d say out of the five [mentees] that have been great yes I have done that [complete switch] with the five, uh it’s rare now that I, I now think to start a conversation in Welsh with them and I send emails or something, you know I’d, send it in Welsh to them”.

In response then to *“you used to speak English with these people?”*, Sharon said, *“yes yes”*, and elaborated:

“we have a group of about five [mentees] that did this project and they were, oh they’re just fantastic every word I speak with them now is in Welsh”.

To clarify, the interviewer followed this by asking, *“you didn’t before?”*, to which Sharon responded:

“no [...] I’d start every conversation in Welsh, and I’ve done that since ever but now the conversation continues in Welsh”.

Another mentee (Nia) said:

“now if I see her [colleague] at a meeting I would [say] hello in Welsh how are you and you know do those things in Welsh rather than just it being all in English because I would have spoken to her by default in English before the mentoring scheme [...] the change has happened”.

One mentee (Lee) rarely spoke to his dedicated mentor prior to the scheme. However, this was always and wholly in English. When the interviewer was in the middle of asking Lee if the scheme had any influence on this, “*so after the mentoring*”, Lee interrupted the interviewer and answered immediately, “*it’s just Welsh*”. This links back to the difficulty of changing language due to familiarity with one’s interlocutor. In this example, the familiarity was not strong. Therefore, changing language was not too challenging.

Mentoring continued when scheme ended.

Although the scheme had officially ended, the mentoring continued. For example, one mentee (Elin) said, “I enjoyed it [mentoring], I enjoy it we’re still doing it”. Further into the interview, Elin said, “well we are still doing it”, and subsequently asked the interviewer, “we’re allowed aren’t we?”. This indicated Elin’s desire to continue the mentoring after the scheme ended. Another mentee (Carwyn) supported this:

“we’re gonna do it [mentoring] um with with or without the scheme”.

The views of the mentors also reflected this. For example, Enid said:

“we’ve just carried on [with the mentoring] thinking that it hasn’t like a line’s been pulled under it [the scheme]”.

One mentee (Catrin) clarified this by saying that:

“we’re carrying on now [with the mentoring sessions] I’m meeting her [designated mentor] either this Friday or next it’s in the diary”.

The scheme had officially ended for 10 weeks at the time of interviewing Catrin.

Theme 3: Limitations of Scheme

Work-based.

Whilst many examples from the respondents disseminated that one of the benefits of the scheme was that it was informal and did not place pressure on them, one mentee (Idwen) contradicted this:

*“sometimes it [the scheme] just felt like something else on top of a pile of stuff I had to do”.*⁵³

However, the scheme let people take a break away from work for their mentoring session.

For example:

“I enjoyed being able to leave the workplace for an hour, even though I took it in my lunch but my lunch is only half an hour so it was like an extended away from the office break” (Elin, mentee).

Further into the interview:

“I walk back into the office after I’ve had an hour with [designated mentor] and I’ll greet everybody in Welsh so it’s light hearted yeah and it’s nice to get out the office”.

Mentors also spoke along these lines. For example:

“everyone was glad I think to get the opportunity to leave work for a bit [...] and then people tended to relax more” (Bryn).

“with some [people] it [the scheme] was just an excuse to get out of work” (Sharon).

Lowri (mentor) suggested that the scheme was just a ‘ticket’ for a longer break:

⁵³ This echoes Aberystwyth University’s conclusion that “respondents see learning Welsh as something that would increase their workload and make their work harder rather than seeing it as part and parcel of their professional development” (2016, p. 36).

“one of the perks a lot of people on the mentoring scheme saw it as an excuse to get out of here and go for a cuppa”.

Missing elements.

Whilst not needing to pass an exam or attend formal classes/courses, etc. was one of the strengths of the scheme, its informal demeanour and lack of pressure might have simultaneously been a fundamental flaw. For example:

“I don’t know if I... gain anything from it [the scheme] apart from, that I’m I’m just keeping my hand in at the moment I’m just keeping something ticking over so I’m not really hoping to achieve anything from it other than tick a box” (Elin, mentee).

Further into the interview, Elin said, “I don’t think you’re achieving anything apart from it was nice going for a walk with [designated mentor] and, speaking a bit of Welsh”. Elin later elaborated: “there’s no exam at the end of it [the scheme] you’re not working towards anything”. Elin elaborated further later into the interview by saying that she did not “feel in itself mentoring scheme, achieved anything apart from it’s a tick box exercise”. Elin later suggested that a tangible reward through some formal assessment might be a fundamental missing element of the scheme:

“any form of submersion it would be handy if it went along with, maybe two [Welsh] lessons a week and you were working towards some kind of exam structure that you got something from, then the mentoring session would probably... fulfil something more than it does at the moment”.

Therefore, setting targets might have been another fundamental missing element of the scheme. For example:

“Some milestones to work towards” (Emily, mentee).

“Maybe having targets in place or something would have been better” (Lowri, mentor).

“We need to hit some we need some sort of minimum” (Manon, mentor).

Encouragement.

Tied in with the informal demeanour of the scheme was the lack of encouragement for the participants to follow the scheme’s procedure. For example, Manon followed-up from the above quote, later saying that:

“the thing is with managers, nobody gave me a nudge are you meeting with Carwyn [designated mentee] this month what are you and Carwyn how many hours have you done as part of the scheme, and no like pressure it was don’t worry if you don’t do it you know... Bryn [Manon’s manager and fellow mentor] or someone could say oh yeah you know you can you can go for an hour [with Carwyn]”.

Mentees also felt encouragement was lacking. For example, one mentee (Carwyn) suggested that someone should be:

“sending us monthly emails um saying we would encourage you to allocate your [mentoring session] slots for the coming semester or summer, um we recommend you do this many but do as many as you can or as if you’re gonna do if you’re gonna do once a month fine, just get them in your diaries”.

Structure.

As the above quote also suggests, the scheme lacked structure. This was a prominent sub-theme within the dataset. For example:

“we could’ve probably done with more structure... you need something more than enthusiasm cos I’ve I’ve got the right attitude and I’ve got enthusiasm but I do need, not just p- not pressure but structure” (Emily, mentee).

On its own, therefore, desire might not suffice. Another mentee (Carwyn) said:

“I know they didn’t want to turn it [the scheme] into some formal course, but a little bit more of a structure of that kind would’ve meant we would, it would have meant the difference for example over me and Manon [designated mentor] having done two sessions to maybe have done ten”.

Manon, Carwyn's designated mentor, made similar comments to Carwyn:

“there's no structure that I'm not really sure how often I was meant to meet Carwyn because it was so flexible it was up to you to meet there were no rules we need some rules sometimes they can be helpful”.

Conversely, another mentor (Sharon) said:

“maybe there'll be you know more structure to it [the scheme] next time, but not too much either cos as I say if you make it too formal people won't um, like that either I don't think so it's um a difficult balancing act”.

Guidance.

Consistent with the lack of encouragement and lack of structure, the participants were of the opinion that the scheme lacked guidance. For example:

“a little bit more structure a little bit more um information to the mentors what they were supposed to do properly like if there were any um, steps they were supposed to achieve or something” (Sharon, mentor).

This also goes hand in hand with the suggestion that one of the missing elements of the scheme were targets for the participants. Other mentors suggested *“training the mentors”* (Caryl) and adding *“a bit more structure and maybe written guidelines”* (Lowri) to the scheme. This was not an exclusive opinion amongst mentors. For example:

“the scheme almost um kinda left people to their own devices a little too much, and I think uh that's where it [the scheme] needs to kinda improve a bit... when you're asking people to mentor who maybe have not been used to that role before so maybe they perhaps need a little extra advice... a short session saying spelling things out a bit more” (Carl, mentee).

When asked what was missing from the scheme, Manon (mentor) for example indicated:

“leadership, and I don't mean like one manager I mean overall someone really like coordinating the scheme, this is the scheme this is the scope, this is what I want you to do”.

Similarly, one mentee (Rhiannon) wanted:

“more kind of uh what do you call it? Cooperation from [manager] or something just to kind of, um if he [manager] said right I want you to go on this scheme I want you to take time to meet with Bethan [designated mentor] um and kind of say, close the reception or go out to see her [...] more awareness or more cooperation from um from managers [...] more awareness, um from senior members of staff”.

Discussion

Upon officially ending the scheme at both participating departments, the author sought to gather the opinions and perceptions of the participants on the experience by conducting a semi-structured interview with the participants ($n=25$) and by asking them to complete a questionnaire. However, time-constraints restricted the author from being able to quantitatively analyse the questionnaire responses in addition to the heavily time-consuming qualitative analysis on the interview transcripts, and subsequently produce a results section for this chapter where these datasets were interlinked. As such, the research team felt that the interview data would make for a nice change between the other two quantitative chapters. The questionnaire results will therefore be the focus of an in-prep manuscript.

Three main themes emerged via thematically analysing the interview transcripts. One of these three themes supported the notion of the LHC effect and the difficulty of changing language habits. The other two themes were broad categories of the perceptions of the respondents of the scheme in terms of its benefits and its limitations. Respondents were clearly aware of the difficulty of changing from using one established language with someone to using a different language with that same person. This echoes the phenomenon of the LHC effect, which the respondents also mentioned during the interview process. Whilst this does not necessarily reflect the perceptions of the respondents in terms of the scheme itself, it does reflect an important issue that the Welsh language mentoring scheme aims to tackle. This awareness from the respondents also clarified the importance of implementing such a scheme

at the outset in order to make progress towards achieving the broader targets set out in the Cymraeg 2050 strategy (Welsh Government, 2017).

One of the aims of this study was to find evidence within the interview data on the opinions of the participants in terms of the potential impact of the scheme on the mentees' Welsh development. Many respondents enjoyed taking part in the scheme. However, this does not necessarily mean that the scheme had an impact. Realistically, an in-depth assessment of the impact of the scheme based solely on the interview data is not possible, especially in the longer term. However, some of the respondents said that the mentoring continued after the scheme officially ended. They could see the beneficial impact that the scheme had and believed that if they continued with the mentoring, so would the impact. This was also something that gave the participants enjoyment, especially since they were under no pressure and could develop their Welsh skills in an informal manner.

Despite many of the respondents discussing the difficulty of changing from one established language and referring to language habits, the respondents' testimonies provide evidence that the scheme did indeed help them break this barrier and increased their use of Welsh, even if just by a little. Some quotes serve as examples to support the idea that the scheme succeeded in its primary goal, i.e., it increased Welsh use. Further, some quotes suggested that some participants completely switched from English to Welsh, and that some participants had evolved from using incidental Welsh and only beginning conversations in Welsh into conducting entire conversations in Welsh. Whilst this is certainly a benefit of the scheme, what is not clear is whether the increased use of Welsh, and even the complete shift from English to Welsh, extended beyond the mentor-mentee pairs, i.e., behavioural spill over. Some of the data presented in Table 13 and Table 14 supports this given that many of the mentees 'stuck to what they were used to', i.e., used English, to complete the different elements of both studies. That is, if a strong behavioural spill over had occurred, one might have expected more of the mentees to use Welsh to complete more of the different elements of the studies. Future studies should endeavour to explore whether the potential impact of a language intervention extends from one context to another⁵⁴.

Visual inspection of the information presented in Table 13 and Table 14 reveals some intriguing things. For example, some participants seemed to be more 'open' to/favoured the Welsh language given that they decided to respond to the bilingual email in Welsh, whilst other participants used English. A disparity in language choice also appears for the different study elements. For example, Sharon (mentor, Table 13), Lee, Rhiannon, Catrin, and Sara (mentees, Table 14) responded to the email in Welsh and used Welsh verbally, yet used English for one or both of the reading/writing elements of the study. This might reflect the

⁵⁴ The author explored this in a qualitative study with some of the participants of the ARFer programme pilot (Study 4, Chapter 4) beyond the timeline of this PhD studentship (see Table 3).

positive impact of the scheme on verbal Welsh use, and the lack of impact of the scheme on reading/writing in Welsh (which the latter was not a focus of the scheme). Hannah (mentee, Table 14) is also intriguing due to responding to the bilingual email and dealing with the info/consent documents in English, yet used Welsh for the other elements of the study. This one example of a participant starting with English (responding to the email) and then using Welsh for some of the other aspects of the study is important and significant because it suggests linguistic evolution (behaviour change and, therefore, behavioural spill over) and, as such, serves as evidence of success/achievement due to the scheme.

Getting a longer break from work might be a benefit from the respondents' perspective. However, the author believes otherwise. For some individuals, this might have been the biggest motivation to take part, especially considering the scheme's informal nature. This suggests that some of the respondents did not value the positive impact the scheme could have on their Welsh development. Therefore, the full potential benefit of the scheme might not have been achievable due to the lack of structure, which along with the participants, the author believes was a fundamental weakness of the scheme. It is plausible that if the scheme was more formally structured, the participants that regarded the scheme as a ticket for a longer coffee break might have been more motivated to try to harness the full potential of the scheme and 'take it more seriously'.

Hand in hand with the lack of structure, perhaps the scheme was offered to staff members without considerable thought towards what exactly their roles were, especially the role of the mentors. It is also of utmost importance to include top-down support as integral elements of the scheme in order to motivate the participants and increase the odds of success of such schemes. Some of the quotes suggest that this was missing from the mentoring scheme in which they participated. Perhaps encouragement, guidance and leadership from staff members that are more senior holds the opportunity to have a significant influence on the participants' level of involvement with the scheme. As a result, the mentees might have experienced better outcomes. Clearly, the testimonies of the participants serve as important data in terms of developing the scheme for the future.

Too much structure, and perhaps making the scheme too formal, might demotivate those enrolled on the scheme. However, not enough structure (as was the case according to some of the quotes) might also be demotivating and could cause participants to lose interest. This balancing act is highly sensitive. Future implementations of language interventions should test different degrees of formality and structure in order to find the optimal balance. Discovering what needs to be put in place, and how strict it should be in order to allow a language intervention to work as best as possible, is a priority. As such, the formality and structure of the next study, namely the ARFer programme pilot (Study 4, Chapter 4), differed slightly to the mentoring scheme.

The intervention in a mentoring scheme study is the appointing of a mentor and the activities undertaken by the mentor-mentee pairs. The interview data, along with the between-phase results from Study 2, Chapter 2 (of which none participated in this study), suggest that the scheme demonstrated success in terms of increasing Welsh use. However, the author did not observe the participants *during* their mentoring ‘sessions’ nor obtain detailed updates by the participants in terms of what they did during their mentoring sessions. As such, the author has no primary nor secondary data on what exactly the mentor-mentee pairs did during their mentoring sessions. That is, it is still unclear why or how the scheme had a positive impact on the participants. Eller, Lev, and Feurer (2014) made a similar claim in terms of the lack of research on the actual mentoring experience during a mentoring scheme and the lack of knowledge on what contributes to the positive impact of such schemes. It is also unclear whether mentor-mentee pairs managed to adhere to the target of meeting three times during the three-month timeframe, nor is it clear whether some of them exceeded this nor to what extent. In addition, despite the positive results, it remains a mystery from the data what makes an effective mentoring relationship, what makes a mentor and a mentee a ‘good’ mentor and a mentee, and what barriers have a negative impact on the mentoring relationship.

The author has also pooled all the data from the mentors and the mentees in order to represent the entire sample. This means that the dataset represents the perceptions of the mentors and the mentees as one category of participants. Due to practical reasons at the time of implementing and analysing the data, the author did not separate the transcripts based on the role of the participants on the scheme in order to compare opinions between mentors and mentees. Future studies should consider having different researchers appointed to analyse transcripts by participants that fit different categories. Using this study as an example, along with the author independently exploring and analysing all transcripts, an additional researcher could have independently explored and analysed transcripts by mentors only, and another additional researcher could have independently explored and analysed transcripts by mentees only. This could have also happened blind, i.e., neither additional researcher had awareness of whether the transcripts were by mentors, mentees, or indeed a mixture of both.

It is also of note here that the interview schedule for the participants of department B was a longer version of the interview schedule for the participants of department A, i.e., it contained double the number of questions. The author developed the interview schedule for the participants of department B due to feeling that the participants could have been much more detailed in their responses had there been more questions in order to dig out that information. As such, the research team felt that the logical step was to focus only on the interview aspect for the participants of department B. One positive from this could have been gathering much more in-depth data from the participants of department B as compared to the participants of department A. That the average duration of the interview for department B was double the average duration for department A, along with the transcripts having nearly double the average word count (counting only the words by the participants), supports this. However, the author did not separate the transcripts per department in order to compare opinions between participants of department A with the opinions of the participants of department B. Therefore, not only does the dataset represent the perceptions of the mentors and the mentees as one category of participants, the dataset represents the perceptions of the interviewees from both departments as one category of participants. The author was not able to write separate chapters for this thesis that separated both departments due to time constraints. Future studies should separate different participant samples and write research reports per 'team' of participants, in addition to having different researchers appointed to analyse transcripts by participants that fit different categories, e.g., mentors and mentees.

In order to understand whether such interventions actually work, future studies should incorporate forms of ‘tracking’ during implementation. Observations is one way of doing this. However, future studies could also harness methodologies such as having catch-ups with mentor-mentee dyads in order to see how things are developing, thus researchers play an active role in boosting the potential effects of the mentoring. Participants could also keep track of their progress and activities via systematic diary entries. On the one hand, these methodologies could offer a better understanding to researchers of why/how an intervention is working. On the other hand, such methodologies might also actively contribute to the level of success, i.e., one might regard the active role of the researcher as an additional intervention on top of the mentoring. Conversely, these processes might also inform researchers that an intervention is not demonstrating positive outcomes. This could lead to an in-play exploration of why an intervention is not working, and subsequently tweaking the design in-play in order to increase its potential success.

In hindsight, while the research team was not involved in creating the guidance booklet that the mentors and the mentees received (see Appendix D), this booklet could have contained a working section for the participants to make notes, monitor how they were getting along throughout the mentoring experience, and respond to elements of the booklet. For example, the booklet asks mentors to make notes of questions that work well during their mentoring sessions. However, where and how they were meant to do this, and how a mentor might judge a question as a ‘good’ question, is unclear. This would have had the potential to ‘add’ to the intervention itself in terms of its success, and would have served as additional evidence in terms of evaluating the impact of the scheme.

One might also consider the guidance booklet itself as an integral part of the intervention, or even a separate intervention altogether to the scheme itself that was meant to be a form of pre-scheme training. However, the booklet seems to assume that all mentees are learners. This is not necessarily true because some participants of the studies within this thesis had registered as a mentee because they did not have confidence to use Welsh – even though they had ample Welsh skills – therefore, they were not necessarily learners. This booklet also lacked detail and guidance in terms of what exactly is a ‘mentor’ and what exactly is a ‘mentee’ in the context of language. It is of utmost importance that individuals taking part in/receiving a language intervention, such as the Welsh language mentoring scheme, attend systematic and strategic training that clarifies and defines the different roles, e.g., mentor and mentee, and thoroughly spells out their roles and their responsibilities. Future research should prioritise the implementation of such training and should clarify that all contributors/participants understand their responsibilities based on their role.

Whilst the above suggestions mainly concern the gathering of data that are more detailed during the mentoring experience, the author does not necessarily suggest abolishing the gathering of data after the scheme has finished, e.g., via semi-structured interviews. Gathering the thoughts of the participants after the scheme has the potential to inform researchers (as is evident by this study) of the impact that such a scheme had on the participants. However, due to practical reasons at the time of implementing this study, the author individually interviewed each participant. Given the length of the interview schedule (see Appendix O, Appendix P and Appendix S) and the sample size ($n=25$), this was a time-consuming process. Although the author gathered a breadth of data by individually interviewing each participant, perhaps researchers could gather sufficient data via means that are more efficient in future studies (which the author could not do for this particular study). For example, researchers could interview mentor-mentee pairs where possible. This would take less time, and potentially would instigate the pairs to reminisce about their mentoring experience and provide useful information that would cover one of the fundamental limitations of the scheme, i.e., what exactly they did that benefitted them. Focus groups are also a feasible and time-efficient option in future studies. In addition, interviewing mentor-mentee pairs could minimise a recruitment issue that the author encountered during this study. That is, as is evident in Table 13 and Table 14, some mentors participated in this study whilst their dedicated mentee did not, and vice versa.

Conclusion

Despite the limitations of this study, the data gathered via the semi-structured interviews, with the support of the quantitative data from a separate cohort of participants in Study 2, Chapter 2, serves as an evidence base on the positive impact of the Welsh language mentoring scheme. Typically, language interventions lack formal evaluation processes (see for e.g., WG, 2012, p. 11). As such, whether they ‘do what it says on the tin’ remains unknown. This study, however, is one foundational block in the goal of bridging the gap between implementing such schemes and evaluating their efficacy. The perceptions of the participants of this study provides information in terms of what elements of the Welsh language mentoring scheme worked for them. Future implementations could harness these elements and potentially improve upon them. In addition, participants shared what elements were missing so that researchers can make appropriate changes in future implementations in order to optimise the impact of the scheme.

The overall goal of the Welsh language mentoring scheme was to help employees (that wanted to) increase their use of Welsh at work by appropriately pairing them with a mentor. The evidence makes a strong case that the mentoring scheme had a positive impact on Welsh use at work. Therefore developing the scheme based on the perceptions of the participants can contribute to creating a stronger scheme that could have a larger impact on Welsh use at work. This could lead to a point where such schemes are integral parts of the policies of workplaces, given that there is a breadth of evidence to suggest that they are effective in achieving their goals. This holds the potential to make a significant contribution to theme 2 of the Cymraeg 2050 strategy (Welsh Government, 2017), namely increase Welsh use, and that specifically within one of the targeted contexts, i.e., the workplace.

Chapter 4, Study 4: A Pre-Post Evaluation of the ‘ARFer’ Programme on Shifting the Linguistic Habit Context (LHC) in a Bilingual Workplace: A Pilot Study

Abstract

One of the strategic priorities of the Welsh Government's Cymraeg 2050 vision is to increase the active use of Welsh. This study piloted a language behaviour change intervention (namely the ARFer programme) in a university department (employees, $n=22$) and evaluated its potential impact on the prevalence of spoken Welsh. There are two main behaviour-change principles integral to the ARFer programme: making a public commitment, and establishing default language habits. Five staff members (referred to as ARFer enablers) committed to use Welsh as the default language choice with their colleagues that could understand Welsh. Traditional language use data have commonly relied on self-report measures. However, given their limitations, the author used a direct observational measure (namely the Bilingual Dynamic Observational Tool: BiDOT) in order to collect actual language use data at baseline, intervention and post-test phases alongside weekly participant self-reports. The results demonstrated that the participants used Welsh more than twice as often at post-test relative to the baseline. This provides a promising indication that implementing commitment-based language change interventions, alongside simple default habit shifting, can increase the use of one language over another in a bilingual context. The potential of the ARFer programme's linguistic influence, and the importance of implementing a research element to future interventions in order to measure potential evidence, can make a significant contribution to the realisation of the Cymraeg 2050 vision.

Keywords: commitment, observation, bilingual workplaces, minority languages.

Introduction

One of the big issues in the realm of minority languages is the overreliance on time-series competence data in order to understand the health state of a minority language. Whilst competence data can inform government and researchers alike whether the absolute number of people able to speak the language is on the rise or is decreasing, they do not suggest why nor whether this reflects citizen behaviour. That is, if a census states that there are more speakers of a language as compared to the previous census results, it does not mean that the health state of the language has accordingly improved. That there are more speakers ‘on paper’ does not necessarily equate to an increased *use* of the language ‘on the ground’. This is also true for census results that demonstrates a reduction in the number of people being able to speak a language. The two latest decennial census results on the Welsh language in Wales demonstrates this negative trend.

The 2001 census results in Wales indicated that 582,400 people (20.8% of Wales’ population: Welsh Government [WG], 2016, p. 7) could speak Welsh. However this decreased to 562,000 people (19% of the population) by 2011 (WG & Welsh Language Commissioner [WLC], 2015, p. 20). This demonstrated that the *Iaith Pawb* official strategy’s aim to increase the 2001 proportion (20.8%) by five percentage points by 2011 (Welsh Assembly Government [WAG], 2003, p. 11) had failed. This was an ambitious goal given that there were only seven years from publishing *Iaith Pawb* in which to achieve it.

The Welsh Government's latest strategy published in 2017, namely *Cymraeg 2050* (WG, 2017), takes a different approach to *Iaith Pawb*. *Cymraeg 2050* has two themes. Theme 1's 'on paper' approach aims to achieve a million Welsh speakers in Wales by 2050. This aspirational vision is a clear numerical target (as compared to a percentage used in *Iaith Pawb*, which fluctuates depending on the growth/reduction in the absolute population) that gives the Welsh Government ample time (33 years⁵⁵) to achieve this ambitious goal (yet more realistic goal as compared to *Iaith Pawb*). Theme 2 takes a behavioural approach by aiming to increase the *use* of Welsh 'on the ground'. *Cymraeg 2050* outlines three contextual targets for achieving theme 2: within social settings, workplaces, and for the delivery and use of services. Theme 2 is therefore concerned with citizen behaviour 'on the ground' as opposed to citizen ability 'on paper'. This offers significant progress against being too concerned with creating more speakers. This study focuses on increasing the use of Welsh within the workplace context.

⁵⁵ This target is so far in the future that one cannot hold the present government accountable for its realisation.

The ambitions of the Cymraeg 2050 strategy represent a significant step-change to increase the prevalence of the use of spoken Welsh due to the Linguistic Habit Context (LHC: the difficulty to change an established default language with someone to another language: see Chapter 1 for a discussion of this definition). For example, Study 1, Chapter 2 indicated a predominantly English LHC. Fluent Welsh-speaking colleagues ($n=11$) spoke English together at work for approximately 70% of their conversations, despite simultaneously enrolling on a Welsh language mentoring scheme⁵⁶. In a follow-up qualitative study (Study 3, Chapter 3), many of the participants (ranging from foundation-level Welsh learners to fluent first language Welsh speakers) shared that English had been set as the linguistic norm within their working relationships or within that particular context (which likely habituated over time due to the LHC effect). They suggested that this contributed to their high use of English. This suggests that one's desire to change, or a knowledge that one can change, i.e., that one *could* speak Welsh to others in the context (even with the support of a language mentoring scheme) is usually insufficient to shift the LHC towards a minority language.

⁵⁶ A voluntary scheme that paired employees with aspirations to use more of their Welsh skills at work (mentees) with an appropriate colleague that wanted to help (mentors). See Chapter 3 for more on the Welsh language mentoring scheme.

The author replicated the Welsh language mentoring scheme and collected linguistic dynamic data pre-, during and post-scheme in order to assess its potential influence on the LHC (Study 2, Chapter 2). The participants used Welsh for 12.41% of their dyadic conversations (between any two people) during the baseline. This increased to 23.89% during the intervention and remained relatively stable (23.26%) during post-test. However, many of the participants anecdotally conveyed a desire to use Welsh more often with their colleagues and within the workplace, despite the proportions of Welsh dyadic conversations significantly increasing during and after the scheme. This is significant because the participants' further desire suggested that they did not feel as though the scheme (implemented to support and encourage their use of Welsh) had enough of a positive effect on their Welsh use behaviour. The research team responded accordingly and began evolving the Welsh language mentoring scheme's paradigm. The result was an evidence-based language behaviour change programme (the ARFer programme) intent on shifting the LHC (specifically increasing Welsh use at bilingual workplaces).

The *Aldahitz* project pilot conducted by Soziolinguistika Klusterra (SLK) of The Basque Country (Jauregi & Superbiola, 2015; Superbiola, 2016) inspired the ARFer programme. The *Aldahitz* project aimed to increase and normalise the use of Basque within the workplace context by asking approximately 20% of employees at seven different workplaces to commit to use only Basque with colleagues. The participants' self-reports indicated a positive effect on the proportion of time in which they perceived they used Basque at work to conduct their conversations across the three phases of the study: Baseline, 59.4%; Intervention, 77.9%; Post-test, 70.7%. *Aldahitz* shows great promise and clear potential for adaptation, replication and further development in Wales. However, the author was keen to evolve from using self-report approaches for the ARFer programme because, as this thesis has already mentioned (see Chapter 1), self-report approaches are assumed to be less reliable given the subjective and retrospective nature of data collection (for e.g., see Dunning et al., 2004; Zhuravleva et al., 2016). The author therefore developed the *Bilingual Dynamic Observational Tool* (BiDOT: see Appendix A) in order to objectively measure the nature of the LHC *in situ* and quantify dyadic verbal interactions occurring in bilingual contexts via real-time direct observations.

The author has tested the BiDOT within common office-based workplace contexts (Study 1 & Study 2, Chapter 2), and a fellow researcher has tested the BiDOT in educational settings and public sports/leisure facilities. These studies demonstrated the BiDOT to be a useful and practical measure for directly collecting quantitative data on language choice and linguistic dynamics within bilingual contexts. The BiDOT offers an observational means to assess the potential impact of language behaviour change interventions, such as the Welsh language mentoring scheme (Study 2, Chapter 2) and the ARFer programme, on language choice in real-world contexts.

ARFer

The aim was to create a practical programme that focuses on contextual change (culture) and viewing language choice as a specific *form of behaviour* upon which both the immediate and historical context can influence. The author has therefore incorporated two key principles from the behavioural sciences as integral elements to the development of the ARFer programme, i.e., commitment making, and default setting (which have an extensive evidence base: see for e.g., Cooper et al., 2014; Dolan et al., 2010; Thaler & Sunstein, 2008). See also Chapter 1 for a discussion on the principles of default setting and commitment making.

The ARFer programme is an arrangement within bilingual workplaces intent on supporting and encouraging people to make more use of their Welsh skills at work. Its primary aim is to shift the LHC of bilingual workplaces and the linguistic habits of dyads towards Welsh by exploiting the power of commitment making/behavioural pledging and default setting. The author did this by appointing some employees as *ARFer enablers*⁵⁷. Their responsibility is to assume a voluntary leadership role, provide a supportive linguistic context, and help develop and build upon skills (and ultimately users' perceived confidence) to use Welsh. This can potentially shift the norm towards Welsh and re-establish linguistic habits between English-using Welsh-speaking staff. This can lead to more reinforced use of Welsh. This can subsequently replace the current English use habit with a new Welsh use habit, thus establishing it as a behavioural norm and eventually as a habitual and automatic behaviour within the workplace context.

⁵⁷ The Aldahitz project labelled these individuals (in Basque) as *Eusle*. The phonetic pronunciation of this word sounds like the English word 'useless' (especially when pluralised [Eusles]). The research team accordingly changed the term to better suit the Welsh context.

The logic is that the ARFer methodology encourages and *enables* Welsh speakers that have developed the habit of using English together to shift their linguistic dynamic towards using Welsh together progressively through systematic behavioural pledging. Jones and Morris (2009, p. 135) supported this by concluding that “it was possible for Welsh-speaking fathers to establish Welsh as the primary or equal language of the home. This appeared to require *commitment* [emphasis added] from the father to use the language with his child(ren) at all opportunities, including in the presence of non-Welsh speakers”⁵⁸. The same commitment-based principle could apply to the workplace context rather than the home context, where the employees that accepted the ARFer enabler role replaced the fathers, and the non-ARFer participants replaced the children. That is, the participants’ use of Welsh would increase during the ARFer programme’s intervention and post-test phases relative to the baseline phase. This has the potential to have a far-reaching and long-term impact on Welsh use within workplaces.

Methodology

Employees at a university department took part in this study. Architectural divisions split the department into four open-plan offices permanently housing four separate teams of employees (see Appendix T): two of the offices housed three employees each, one office housed eight employees, and the other office housed seven. One employee had a separate private office (as illustrated by the pink rectangle in Appendix T).

⁵⁸ However, “in the presence of non-Welsh speakers” is not applicable to this study (see grouping system).

Participants

All 22 employees ($n=11$, fluent Welsh; $n=11$, non-fluent Welsh) consented to participate. The author used the same fluency categorisation procedure as described in Study 1, Chapter 2 for this study. The same department that took part in Study 2, Chapter 2 took part in this study. However, not all the employees were the same ones (see Discussion: Study 2, Chapter 2). As such, it is important to note here that the author had a pre-existing relationship with some of the employees prior to initiating this study and had already ‘settled in’ to the department as an observer (though this does not necessarily mean that the author was ‘part’ of the department’s team, just a part of the department’s furniture).

Appointing ARFer enablers.

Five employees ($n=4$, fluent; $n=1$, non-fluent) were selected as prospect ARFer enablers. Four of which were nominated by the director of the department (a fluent Welsh speaker) whom also volunteered as the fifth ARFer enabler. The director nominated the other three fluent employees because the director perceived that they were confident and comfortable Welsh speakers that generally used Welsh amongst each other and with most of their fluent Welsh colleagues. The director nominated the one non-fluent employee as an ARFer enabler due to being an advanced learner with aspirations to make more use of Welsh skills outside of the learning environment⁵⁹.

Measures

The author collected all data via direct *in situ* naturalistic observations and via asking the participants to complete an online self-report survey.

⁵⁹ This echoes the issue of Welsh learners not transferring their Welsh skills from the closed learning environment into the real open world.

The BiL DOT.

The BiL DOT (see Appendix A) offered an objective means to collect live dyadic verbal language use data by observing at each of the four separate offices within the department.

Weekly self-report survey.

The author replicated the questionnaire used by SLK for the Aldahitz project (Jauregi & Superbiola, 2015; Superbiola, 2016) for the participants to complete as late as possible into their working week⁶⁰. The author asked the participants to note their own personal perception of the linguistic dynamic between themselves and each of their 21 colleagues by choosing one of seven choices on a Likert scale⁶¹. The response choices ranged from “Always English” to “Always Welsh”. The author asked them to choose this twice per dyad in order to state the linguistic dynamic in both directions for that workweek (see Table 15 for an example; see also Appendix U).

⁶⁰ SLK asked the participants of the Aldahitz pilot project to complete the questionnaire once prior to launching the Eusle system in order to get a baseline measurement, at the end of each working week during the two-month intervention phase, and once after a three-month break in order to get their post-test measurement.

⁶¹ Thomas and Roberts (2011) used a similar scale for capturing school pupils’ self-reported language use (see p. 94).

Table 15

An example of the question for the participants to note the bidirectional linguistic dynamic between themselves and a colleague

This week, this was the linguistic dynamic between me and Elen [Me to Elen] and the other way [Elen to Me]								
I'm Elen...	Always English	Almost Always English	More English	Equal	More Welsh	Almost Always Welsh	Always Welsh	I didn't speak to Elen...
Me to Elen			✓					
Elen to Me							✓	

Note. This appeared 22 times in order to refer to each individual employee in alphabetical order (this example demonstration uses a pseudonym). The author has randomly chosen a response for each speech direction in order to demonstrate the potential of stating a possible difference in language use dependent upon the direction of speech.

Design

The author utilised a pre-post design to compare the participants' language behaviour between each study phase. The timeline of each study phase was as follows:

- Eight-week Baseline, August 21, 2017 – October 27, 2017^{62,63};
- Three-week break, October 30, 2017 – November 17, 2017^{64,65,66};
- Thirteen-week Intervention, November 20, 2017 – March 9, 2018⁶⁷;
- Five-week break, March 12, 2018 – April 13, 2018⁶⁸;
- Three-week Post-test, April 16, 2018 – May 3, 2018.

Ethical Considerations

The author took the appropriate ethical steps before commencing data collection. The relevant ethics committee granted ethical approval to conduct the study (ref. 2017-16085). The author took particular care not to disclose the participants' identities to guarantee their anonymity. As such all participants were numbered. The author initially sought and obtained written informed consent to observe within the workplace during the baseline phase (see Appendix V for a copy of the information sheet and Appendix W for a copy of the consent form). The author then sought and obtained written informed consent again prior to launching the ARFer commitment (for the intervention and the post-test phases) after briefing all

⁶² September 18-22, 2017: department director requested no observations for this week due to unusually heavy workload for the department as a whole.

⁶³ October 9-13, 2017: no observations due to author taking annual leave.

⁶⁴ October 30 – November 3, 2017: the author could not observe to collect more baseline data due to attending a weeklong professional development course.

⁶⁵ November 6-10, 2017: see footnote 63.

⁶⁶ November 13-17, 2017: introduce intervention (see Intervention).

⁶⁷ December 18, 2017 – January 5, 2018: no observations due to closure of department (Christmas holidays).

⁶⁸ March 27, 2018 – April 13, 2018: this coincided with the Easter holidays and the director had informed the author that, if there were plans to return to observe during this time, that it might not be worth it due to plans that many of the employees had made in terms of taking annual leave.

participants on the procedure (see Appendix X for a copy of the information sheet and Appendix Y for a copy of the consent form).

The author sought the nominated ARFer enablers' consent to accept the ARFer role prior to launching the intervention phase. The ARFer role was voluntary and the nominated ARFer enablers were under no obligation to accept⁶⁹. All prospective ARFer enablers accepted the role, and all the participants had the opportunity to raise concerns/objections regarding those five employees that voluntarily agreed to assume the ARFer enabler role (participants did not raise any concerns or objections). The project had nothing to do with the participants' actual jobs. Punishment and negative consequences could not arise due to taking part, regardless of their level of engagement with the project (including the ARFer enablers' engagement with the language commitment).

Procedure

The author used the same procedure described in Study 1, Chapter 2 to use the BilDOT in order to collect language use data via observations for this study. Observation sessions lasted for 2 hours in the morning and/or afternoon from one of the four offices within the department (the author sat on the empty desks denoted by a red rectangle at each office: see Appendix T). The author solely conducted all observations (hereafter referred to as the observer).

Baseline.

The observer did not instigate any changes for the 8-week baseline phase apart from being present for observations data collection and the introduction of the online self-report survey.

⁶⁹ The author had back-up ARFer enablers in case the nominated enablers rejected the opportunity.

Intervention.

Following the 8-week baseline phase, the observer arranged one-to-one meetings with the participants during a one-week break prior to launching the intervention phase in order to explain the ARFer methodology and seek consent. The observer distributed a handout to the participants (see Appendix Z) and explained that five employees referred to as ARFer enablers (approximately 20% of the team, thus replicating the original Aldahitz project methodology) will voluntarily assume a leadership role from the following Monday by committing to speak Welsh as the default language at all times with colleagues that understand Welsh.

Participants who were not ARFer enablers did not make a commitment to speak any particular language. The observer distributed new information sheets (see Appendix X) and consent forms (see Appendix Y) at the end of each one-to-one meeting. Although the observer was hoping to obtain their informed consent to continue observing and to allow implementation of ARFer as described, the observer explained that they would not intervene when/if ARFer enablers dishonoured their commitment. As such, the presence of the observer was not to ensure or police a positive outcome, only to measure *potential* impact.

The grouping system.

The observer devised a grouping system in order to handle linguistic diversity at the participating workplace as an integral element of the ARFer methodology. The grouping system served as a measure to avoid directly causing feelings of exclusion due to the intervention. It was also a means to avoid linguistic awkwardness amongst the cohort and ensured that individuals did not miss important work-based communicated information that could have subsequently lead them to be unable to execute their work duties to their full capacity. Activating the ARFer commitment therefore required meeting specific conditions.

The grouping system dictated the stringency of the commitment and introduced flexibility and exemptions to the commitment dependent on the interlocutors of the conversation in order to avoid the perception that the ARFer programme introduced an element of linguistic regulation. Whilst the observer shortlisted each participant to one of the three groups (Strict, Flexible, or Optional) based on the baseline data, it was each participant's personal decision to which group they subscribed. As such, the observer sought every participant's voluntary agreement with respect to which of the three groups they wished to subscribe⁷⁰ (Table 16 notes the numbers of participants by their fluency and group membership). This grouping system also clarified that participation was voluntary and based on a unanimous group agreement. See Appendix T for an illustration of where the participants' desks were located based on the group to which they subscribed.

⁷⁰ The observer also emphasised that they could switch from one group to another at any time during the study without needing a reason. Incidentally, however, this did not occur.

The strict group.

The ARFer enablers committed to set Welsh as their default language choice and pledged to always use Welsh with all strict group members ($n=13$). All strict group members agreed that they could not ask ARFer enablers to switch to English temporarily. All ARFer enablers subscribed to the strict group.

The flexible group.

Same as the strict group, however members of the flexible group ($n=6$) could ask ARFer enablers to temporarily switch to English⁷¹.

The optional group.

Subscribers to the optional group ($n=3$) rendered the ARFer commitment suspended when they were active members of any conversation and/or when they were present. Speaking Welsh and/or English in this situation was therefore not commitment-influenced.

Table 16

Number of fluent and non-fluent participants based on the group to which they subscribed

Fluency Status	Group		
	Strict	Flexible	Optional
Fluent	11	0	0
Non-fluent	2	6	3

⁷¹ ARFer enablers did not have to switch to English if/when members of the flexible group asked them to switch. Continuing to use Welsh or switching to English was a personal decision.

Post-test.

Following 13 weeks of observing language behaviour during the intervention phase, the observer took a six-week break without data collection. The observer returned to continue data collection during the post-test phase for three weeks following the six weeks during which no data was gathered.

Questionnaire Results

The observer received 15,244 questionnaire responses overall (Baseline, $n=5,668$; Intervention, $n=7,896$; Post-test, $n=1,680$).

Exclusion

Whilst this chapter categorises the members of the optional group ($n=3$) as non-fluent in Welsh, they were in reality monolingual English. Therefore, the observer excluded questionnaire responses *by* members of the optional group and by other participants referring to language use *with* members of the optional group from the final dataset (Baseline, $n=1,252$; Intervention, $n=1,832$; Post-test, $n=332$). The observer did this because members of the optional group could not contribute to conversations through the medium of Welsh and limited others from using Welsh within their presence (due to implementing the optional group).

Data Exploration

The observer explored the remaining 11,828 questionnaire responses (Baseline, $n=4,416$; Intervention, $n=6,064$; Post-test, $n=1,348$) in order to calculate the percentage of time in which the participants perceived Welsh was being used between themselves and each of their colleagues (see Weekly self-report survey) during each study phase. The observer subsequently explored the questionnaire data based on ARFer status (ARFer enablers speaking to ARFer enablers, ARFer enablers speaking to NonARFer participants, NonARFer participants speaking to ARFer enablers, NonARFer participants speaking to NonARFer participants). The observer also explored the data based on fluency in Welsh (fluent participants speaking to fluent participants, fluent participants speaking to NonFluent participants, NonFluent participants speaking to fluent participants, NonFluent participants speaking to NonFluent participants).

Perceived Use of Welsh

The participants perceived that they used Welsh overall throughout the study for 40.56% of their conversations. The proportional values across each study phase was as follows: Baseline, 34.1%; Intervention, 45.61%; Post-test, 39%.

ARFer status.

The participants perceived that ARFer enablers used Welsh most often when they spoke to fellow ARFer enablers (67.19%). Their perception of Welsh use was lower for ARFer enablers speaking to NonARFer participants (49.46%) and even lower in the other direction (48.24%). They perceived that Welsh use was at its lowest between NonARFer dyads (30.62%). Figure 5 shows the percentage of time in which the participants perceived that they used Welsh per study phase based on the dyads' ARFer status.

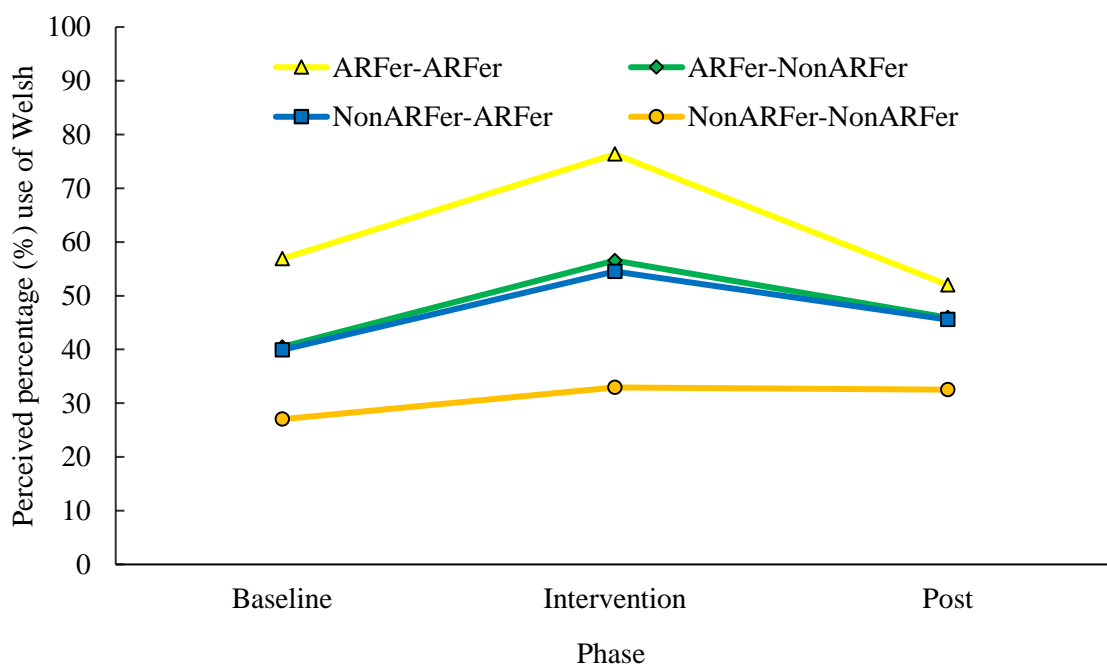


Figure 5. Participants' perceived percentage of time in which they used Welsh per phase based on the dyads' ARFer status.

Fluency.

The participants perceived that fluent participants speaking to fellow fluent participants used Welsh most often (90.58%). The participants perceived that Welsh use was lower for fluent participants speaking to NonFluent participants (17.19%) and even lower in the other direction (15.9%). They perceived that NonFluent dyads used Welsh for their conversations the least often (6.68%). See Figure 6 for the percentage of time in which the participants perceived that they used Welsh per study phase based on the dyads' Fluency.

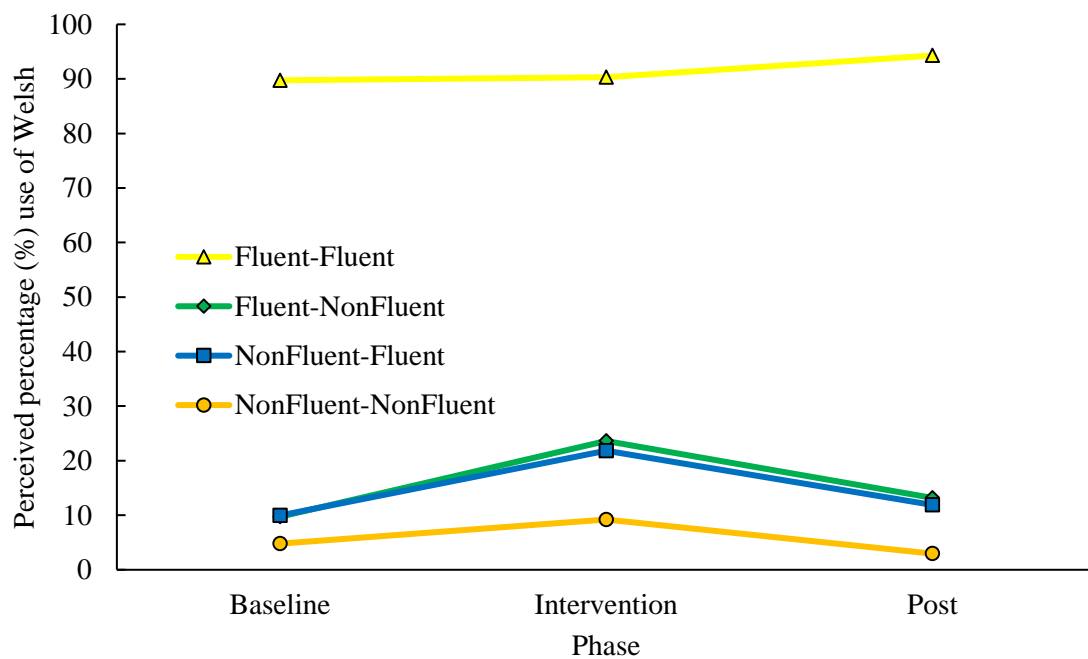


Figure 6. Participants' perceived percentage of time in which they used Welsh per phase based on the dyads' Fluency.

Observations Results

The observer observed 8,000 dyadic conversations overall (see Table 17). The ARFer commitment was suspended when non Welsh-speaking participants (subscribers to the optional group, $n=3$) were part of a conversation and/or when they were present. The observer therefore excluded conversations involving non Welsh-speaking participants ($n=2088$) as with the questionnaire results (see Exclusion); the research team analysed the remaining 5,912 conversations (see Table 18).

The observer completed 390 hours of direct, naturalistic *in situ* observations (see Table 19) in which the participants used Welsh to initiate their dyadic verbal conversations overall throughout the study for 52.47% of their conversations. The proportional values across each study phase was as follows: Baseline, 34.51%; Intervention, 64.33%; Post-test, 71.92%.

Table 17

Original number of conversations observed per phase

Study Phase	Location				Whole Department
	Office 1	Office 2	Office 3	Office 4	
Baseline	679	988	1097	785	3549
Intervention	658	1280	1092	720	3750
Post-test	121	349	93	138	701
Total	1458	2617	2282	1643	8000

Table 18

Final number of conversations observed (included in analysis) per phase

Study Phase	Location				Whole Department
	Office 1	Office 2	Office 3	Office 4	
Baseline	172	841	782	703	2498
Intervention	250	1135	813	639	2837
Post-test	33	346	75	123	577
Total	455	2322	1670	1465	5912

Table 19

Number of hours observed per phase

Study Phase	Location				Whole Department
	Office 1	Office 2	Office 3	Office 4	
Baseline	32	32	32	32	128
Intervention	52	56	52	54	214
Post-test	12	14	10	12	48
Total	96	102	94	92	390

Exploratory Generalised Linear Mixed Effects Regression (GLMER)

The research team utilised the `glmer` function (`lme4` package, Microsoft R Open 3.3.2) to analyse the data. The research team followed Manning's guide to conduct an exploratory multi-level binomial logistic regression (2007) in order to examine the effect of the language commitment on the odds of using Welsh to initiate a dyadic conversation as a function of ARFer status per study phase. Level 1 consisted of dyads, and Language of Initiation (Welsh = 1, English = 0) was measured at this level. There were 320 dyadic relationships (e.g., P1 -> P2; P2 -> P1; P3 -> P1, etc. where P = participants) ranging from 1-356 conversations per dyad ($Mdn = 7$, $IQR = 15$; $M = 18.48$, $SD = 36.36$). Level 2 comprised of the four different offices with every observed dyadic conversation nested within each office.

The research team included Study Phase as a fixed three-level numeric factor (Baseline, Intervention, and Post-test) and applied orthogonal polynomial contrasts to account for both linear and quadratic trends in participants using Welsh to initiate conversations across each study phase. The research team included ARFer status as a fixed four-level factor based on the nature of the initiator-interlocutor characteristics: NonARFer participants initiating conversations with fellow NonARFer colleagues (NonARFer-NonARFer), NonARFer participants initiating conversations with ARFer enablers (NonARFer-ARFer), ARFer enablers initiating conversations with NonARFer colleagues (ARFer-NonARFer), ARFer enablers initiating conversations with fellow ARFer enablers (ARFer-ARFer). Centred backward difference contrasts on the ARFer status factor produced three primary dyadic contrasts: NonARFer-NonARFer vs. NonARFer-ARFer, NonARFer-ARFer vs. ARFer-NonARFer, and ARFer-NonARFer vs. ARFer-ARFer.

ARFer status as a fixed factor.

The research team fit a baseline model that included fixed factors of linear and quadratic Study Phase terms and random intercepts of Dyad and Office. Adding ARFer status as a fixed factor significantly improved model fit ($AIC_{DIFF}^{72} = 29.47$; $\chi^2(3) = 35.47$, $p < .0001$). The research team also added separate interactions between the linear and quadratic terms of Study Phase with ARFer status in two steps. The $Phase_{LINEAR}: ARFer$ status interaction significantly improved model fit based on a log-likelihood test ($AIC_{DIFF} = 3.90$; $\chi^2(3) = 9.85$, $p = .02$). The $Phase_{QUADRATIC}: ARFer$ status interaction improved the model fit ($AIC_{DIFF} = 27.54$; $\chi^2(3) = 33.54$, $p < .0001$) over the $Phase_{LINEAR}: ARFer$ status step.

Welsh use.

ARFer enablers used Welsh most often to initiate conversations when their target interlocutor was a fellow ARFer enabler (84.25%). ARFer enablers used Welsh less often to initiate conversations with NonARFer participants (64.29%) and even less often in the other direction (52.36%). NonARFer participants initiating conversations with fellow NonARFer participants used Welsh the least often (28.55%). Figure 7 shows the percentage of time in which the observer observed the participants using Welsh to initiate their conversations per study phase based on the dyads' ARFer status.

⁷² Akaike Information Criterion.

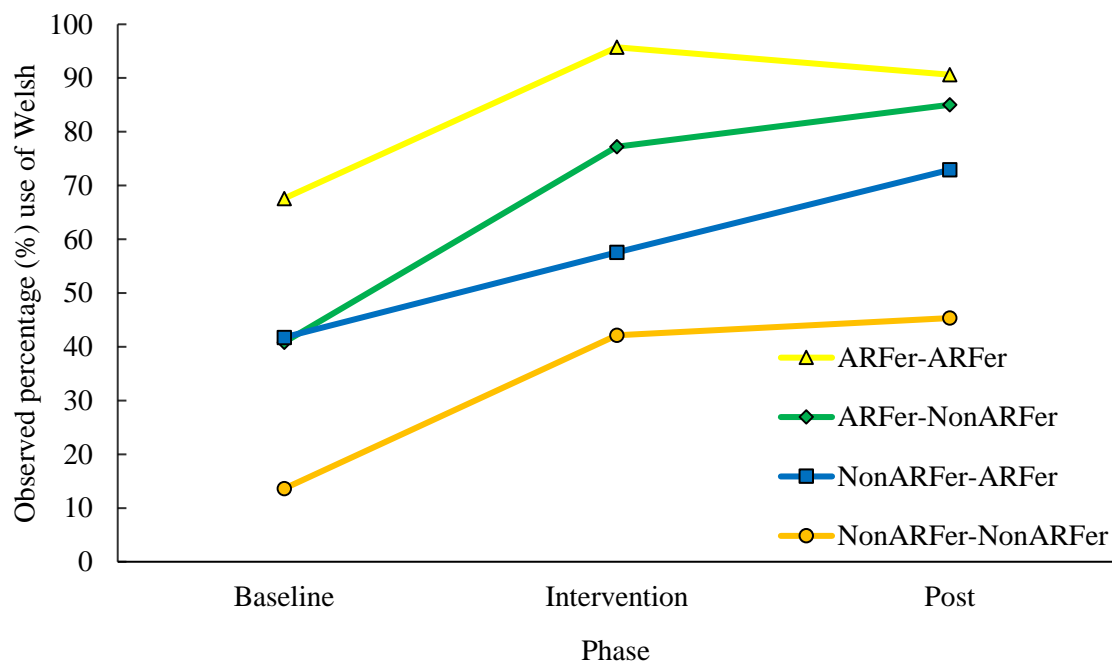


Figure 7. Percentage of observed conversations initiated in Welsh per phase based on the dyads' ARFer status.

Odds of using Welsh.

The odds of using Welsh to initiate conversations was greater for NonARFer-ARFer dyads as compared to NonARFer-NonARFer dyads (odds ratio = 1.78, $z = 2.44$, $p < .001$). ARFer-NonARFer dyads used Welsh to initiate conversations more often than NonARFer-ARFer dyads (odds ratio = 1.55, $z = 1.83$, $p = .067$): the odds of using Welsh to initiate conversations was similar for ARFer-NonARFer and ARFer-ARFer dyads (odds ratio = 1.40, $z = -0.62$, $p = .538$).

The trajectory of change over each study phase was similar for NonARFer-NonARFer and NonARFer-ARFer dyads (odds ratio = 0.4, $z = 1.17$, $p = .241$). The increased Welsh use to initiate conversations was greater for ARFer-NonARFer dyads relative to NonARFer-ARFer dyads (odds ratio = -1.54, $z = -4.43$, $p < .001$). However the slopes were similar for ARFer-ARFer dyads as compared to ARFer-NonARFer dyads (odds ratio = 1.92, $z = 1.59$, $p = .112$).

See Table 21 in Appendix AA for fixed effects estimates with confidence intervals. Wide confidence intervals for most fixed effects estimates are likely due to the small sample size ($n=22$).

Fluency as a fixed factor.

The research team utilised the same baseline model as with the ARFer status analysis here. Adding Fluency as a fixed factor significantly improved model fit ($AIC_{DIFF} = 296.48$; $\chi^2(3) = 302.48$, $p < .0001$). The research team added separate interactions between the linear and quadratic terms of Study Phase with Fluency in two steps. Both interactions improved model fit significantly: $Phase_{LINEAR}: Fluency$ ($AIC_{DIFF} = 22.86$; $\chi^2(3) = 28.86$, $p < .0001$); $Phase_{QUADRATIC}: Fluency$ ($AIC_{DIFF} = 12.16$; $\chi^2(3) = 18.16$, $p = .0004$).

Welsh use.

Fluent participants used Welsh most often to initiate conversations with fellow fluent participants (92.5%). Fluent participants used Welsh less often to initiate their conversations with NonFluent participants (25.5%) and even less often in the other direction (14.9%). NonFluent participants used Welsh to initiate their conversations the least often when their target interlocutor was a fellow NonFluent participant (7.61%). Figure 8 shows the percentage of time in which the observer observed the participants using Welsh to initiate their conversations per study phase based on the dyads' fluency.

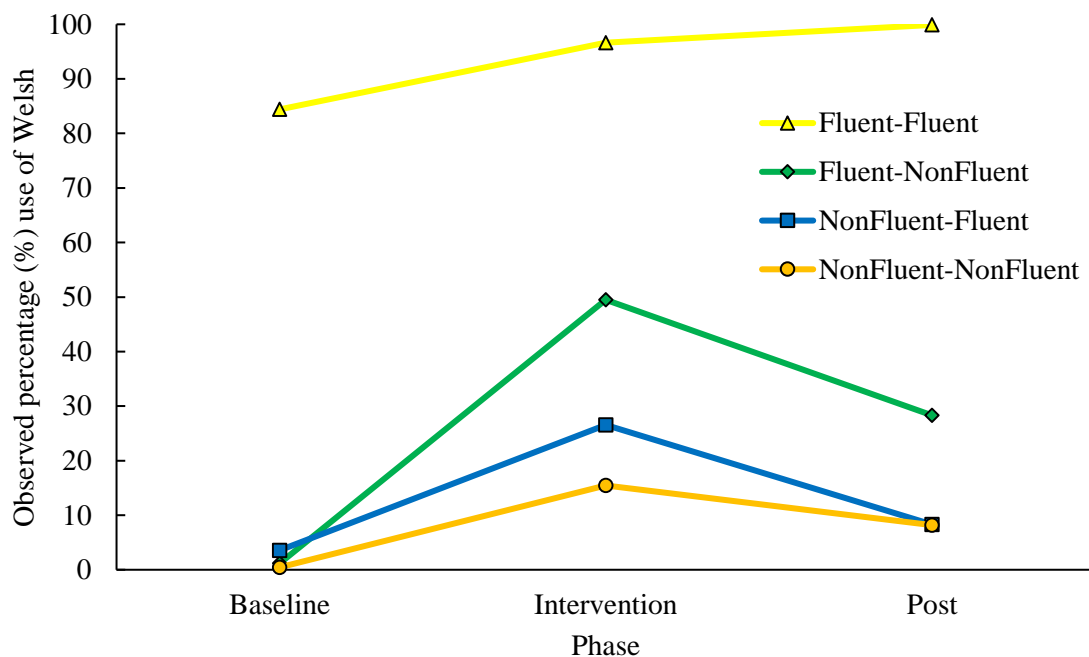


Figure 8. Percentage of observed conversations initiated in Welsh per phase based on the dyads' Fluency.

Odds of using Welsh.

The odds of using Welsh to initiate conversations was greater for NonFluent-Fluent dyads as compared to NonFluent-NonFluent dyads (odds ratio = 0.49, $z = 0.8$, $p < .425$). Fluent-NonFluent dyads used Welsh to initiate conversations more often than NonFluent-Fluent dyads (odds ratio = 0.71, $z = 1.34$, $p = .182$) as did Fluent-Fluent dyads use Welsh much more to initiate their conversations as compared to Fluent-NonFluent dyads (odds ratio = 6.97, $z = 11$, $p < .001$).

The trajectory of change over each study phase was similar for NonFluent-NonFluent and NonFluent-Fluent dyads (odds ratio = -0.3, $z = -0.57$, $p = .567$). The increased use of Welsh to initiate conversations was greater for Fluent-NonFluent dyads relative to NonFluent-Fluent dyads (odds ratio = -0.9, $z = -2.38$, $p = .017$) and for Fluent-Fluent dyads as compared to Fluent-NonFluent dyads (odds ratio = 1.88, $z = 3.51$, $p < .001$). See Table 22 in

Appendix AB for fixed effects estimates with confidence intervals. Wide confidence intervals for most fixed effects estimates are likely due to the small sample size ($n=22$).

Questionnaire vs. Observation

Table 20 summarises the percentage of time that the participants used Welsh according to both datasets during all study phases.

Table 20

Use of Welsh (%) according to the observations dataset and the questionnaire dataset

Dyad Type	Study Phase & Dataset					
	Baseline		Intervention		Post-test	
	Qs	Obs	Qs	Obs	Qs	Obs
ARFer-ARFer	56.89	67.59	76.35	95.73	52.02	90.6
ARFer-NonARFer	40.47	40.83	56.54	77.2	45.91	85.03
NonARFer-ARFer	39.93	41.75	54.51	57.58	45.57	72.92
NonARFer-NonARFer	27.02	13.6	32.93	42.15	32.52	45.34
Fluent-Fluent	89.74	84.4	90.3	96.63	94.28	99.89
Fluent-NonFluent	9.73	1.17	23.61	49.49	13.18	38.29
NonFluent-Fluent	9.95	3.56	21.83	26.55	11.92	8.29
NonFluent-NonFluent	4.78	0.44	9.21	15.45	2.96	8.17
Overall	34.1	34.51	45.61	64.33	39	71.92

Note. Qs = questionnaire; Obs = observations.

Whilst the author did not implement statistical analysis on the questionnaire data, and therefore could not implement a detailed comparison between both datasets, Table 20 suggests that there were sometimes similarities between the datasets, yet at other times vast differences. For example, there was only a 0.36% difference between the questionnaire value and the observations value for ARFer-NonARFer dyads during the baseline, whilst the largest difference was at 39.12% during the post-test, and that for this same dyadic group. Overall, the difference in percentage points between the questionnaire value and the observations value per study phase was as follows: Baseline, 0.41%; Intervention, 18.72%; Post-test, 32.92%. Whilst this might suggest that the observations reflect inflated results, the author believes otherwise.

Questionnaire Issues

This thesis has already emphasised the limitation of self-reports in terms of participants not providing accurate responses. In addition, as time goes by during the study, the values suggest that their accuracy is becoming worse, thereby suggesting that the participants are losing interest in terms of trying to provide accurate responses. Not including the three monolingual English employees (as described in Exclusion), the maximum number of possible completed questionnaires during each study phase (if all participants had completed the questionnaire every week) was as follows⁷³: Baseline, $n=152$; Intervention, $n=247$; Post, $n=76$ ⁷⁴. The actual number of responses per study phase was as follows: Baseline, $n=121$; Intervention, $n=171$; Post, $n=34$. These equate to a degenerating response rate of 76.91%, 69.23%, and 44.74% for the baseline, intervention, and post-test respectively.

Therefore, as time went by, not only did the participants seem to lose interest in terms of

⁷³ The author calculates this by multiplying the number of participants ($n=19$) by the number of weeks per study phase.

⁷⁴ Whilst the post-test phase was three weeks, 10 participants completed the questionnaire to report on their language use on what would have been the fourth week of the post-test phase. The author did not include these values in the exploration of the data for this chapter.

providing accurate responses, they also seemed to lose interest in terms of completing the questionnaire altogether.

The author does not suggest here that the participants therefore was the problem. Rather, the suggestion here is that the problem was a limitation in the design of the questionnaire. That is, in order to get a full-week reflection from the participants, the author asked them to complete the questionnaire as late as possible into their working week before they took off for the weekend. One must therefore question whether providing accurate responses to the questionnaire was at the forefront of the participants' minds at the end of their busy working week. One must also question whether the participants were in the right frame of mind and had the time at the end of their working week to be able to think deeply and reflect on their language use with each of their colleagues in order to provide the most accurate response as possible for each colleague. In addition, many of the participants responded to the questionnaire during the middle of the next working week to reflect on the previous week. This raises further questions regarding the accuracy of the participants' responses, given the time that had passed since the behaviour of interest occurred and when they reported on it (see also Discussion). In general, therefore, due to the limitations of self-report methodologies, along with the limitations emphasised above and time-constraints at the time, the author (with the support of the research team) decided not to invest in statistically analysing the questionnaire data and placed focus on statistically analysing the observations data for this study.

Discussion

The aim of this current study was to pilot and investigate the potential impact of the ARFer programme on the prevalence of spoken Welsh at a bilingual workplace. The author used the BiDOT (see Appendix A) to collect dyadic data on the participants' language use via direct observations, and collected their self-perceived linguistic dynamic by means of a supplementary self-report questionnaire. This provided both subjective and objective measures of the type of conversations for all dyads. Exploration of the questionnaire responses, and statistical analysis on the observations data, supported the hypothesis that Welsh use would increase amongst the department's staff as a function of study phase: Welsh use increased during the intervention relative to the baseline (odds ratio: questionnaire, 1.34; observations, 1.86) and during post-test relative to the baseline (odds ratio: questionnaire, 1.14; observations, 2.09). The observations data indicated that the department's overall proportional use of Welsh to initiate their conversations more than doubled (2.09 times more Welsh use) from baseline to post-test. This suggests a longer-term effect of the ARFer commitment on the participants' linguistic practices. The author therefore argues that encouraging Welsh use simply by means of making a language commitment was mostly responsible for this increase. This serves as strong evidence of the effectiveness of the ARFer intervention in supporting a LHC shift towards Welsh at the participating department.

In addition to a general, department-wide LHC shift towards Welsh, the observations results also suggests a similar impact amongst all dyadic combinations. The greatest improvement was between ARFer enablers (conversation initiator) and NonARFer colleagues (conversation interlocutor). Setting Welsh as the default language on behalf of the ARFer enablers therefore seemed to have an influence on their use of the language. This echoes Evas and Cunliffe's suggestion that "the default language of a website has a large bearing on people's language use on websites" (2017, p. 73). This demonstrates the value of engagement from active Welsh speakers with less active Welsh speakers. These gains importantly persisted and even expanded during the post-test⁷⁵. There was also a similarly strong trend for Fluent-Fluent dyads to use Welsh to initiate their conversations. This highlights the value of fluent speakers engaging with NonFluent speakers, whether they are at the very infancy of their language learning journey or highly advanced learners, to promote healthy engagement with Welsh in the workplace. This has significant implications in terms of how workplaces in future, along with researchers, implement language interventions within organisations and, possibly, include such elements as integral parts of their policies of operation.

⁷⁵ One must interpret these post-test phase results with caution given the difference in the number of data points collected (see Table 18) and the number of hours the observer spent collecting the data (see Table 19) as compared to the baseline and the intervention phases.

With the exception of NonFluent-NonFluent dyads' conversations (questionnaire data only), all dyadic groups used Welsh more often during the intervention and the post-test phases as compared to their baseline counterparts. This suggests that ARFer *enabled* the participants to use Welsh more often during the intervention and the post-test phases relative to the baseline despite everything, other than the commitment, being the same per study phase. This was also true for the NonARFer participants. This suggests that the ARFer enablers' changed linguistic practices seemed to spill over into the linguistic practices of the NonARFer participants, i.e., behavioural spill over. One explanation as to why this occurred could be a reinforcement of the new norm of speaking Welsh. Subsequently, others that did not match this behaviourally might have felt more inclined to shift towards this norm (by increasing their own Welsh use) in order to be part of the norm⁷⁶. That said, what is not clear at this early stage of developing the ARFer system is what type of people would serve as optimal ARFer enablers in order to facilitate this effect to its full potential. For example, factors such as attitude towards Welsh and bilingualism, ability level in/confidence/willingness to (try to) use Welsh, general confidence, talkativeness, popularity amongst colleagues, hierarchical level at the organisation (amongst other factors) might all play a part in their level of adherence to the ARFer commitment. Researchers should give considerable attention to this area of development in future.

⁷⁶ Despite the positive results of Study 2, Chapter 2, and Study 3, Chapter 3, the predominant use of English by mentors to speak to mentees in Study 1, Chapter 2 suggests that a paradigm such as ARFer was more effective at increasing Welsh use as compared to a paradigm such as the Welsh language mentoring scheme. The author believes that the ARFer programme *enabled* the use of Welsh by Welsh speakers with interlocutors with whom they were not used to speaking Welsh *due to the commitment*. In addition, the individuals that needed the support to use Welsh, i.e., the NonARFer participants, demonstrated behavioural spill over in response to the ARFer enablers by way of using more Welsh themselves. This has important implications for how researchers should design and implement language interventions in the future.

It is also of importance to emphasise that Welsh speakers continued to speak English given that the percentage of ARFer-ARFer conversations in Welsh did not reach 100% during the intervention/post-test phases. Whilst the practicability of the BiL DOT allowed the author to collect data that was detailed enough to be able to explore the fidelity of implementation of the ARFer commitment, i.e., how often the ARFer enablers adhered to the commitment under appropriate conditions (as governed by the grouping system), the author did not perform this exploration. Comparing the adherence of the ARFer enablers to the commitment when in the presence of members of the strict group with their adherence when no members of the strict group were present might reveal interesting behavioural trends. Future ARFer implementations should endeavour to factor this in when conducting data analysis. At face value, it is clear that the ARFer enablers did not adhere to the commitment at all times. However, it is not clear why. In order to improve the adherence of the ARFer enablers, future studies should consider including linguistic assertiveness training as an integral element when introducing the intervention. Linguistic assertiveness training has the potential to increase one's confidence to use Welsh (Suay & Sanginés, 2012: as cited by Evas & Morris, 2017), and has the potential to give others (in this case, NonARFer participants) the "confidence to insist that Welsh speakers use the language" (Gruffudd & Morris, 2012, p. 140) with them.

The number/proportion of a team operating as ARFer enablers might also play a role in the level of impact. This current study replicated the proportion of 20% applied in the Aldahitz pilot project (Jauregi & Superbiola, 2015; Superbiola, 2016). However, it is not clear what the optimal balance of ARFer enablers and NonARFer participants would be in order to facilitate the best outcome. Asking everyone to operate as ARFer enablers might not be possible given the realistic linguistic diversity of Wales' bilingual workplaces (this is also why there needs to be a grouping system in order to avoid excluding people as a direct result of implementing ARFer). Even in situations where it will be possible to ask everyone to assume the ARFer enabler role, this might be overwhelming. This could lead to people feeling apathetic, resilient, and demotivated to achieve the goal. That is, no one will be conspicuous as having certain responsibilities if everyone shares the same responsibility. This can also cause the bystander effect/pluralistic ignorance (Gleitman et al., 2011). That is, some people might not bother to honour their responsibility due to believing that someone else (since they are also responsible) will do it on their behalf. If everyone were to think like this, nobody would honour the commitment despite everyone having assumed the role of ARFer enabler. It is also possible that asking some ARFer enablers to immediately honour the language commitment with everyone involved can be deterring. This was how the research team applied the commitment for this study. However, it is possible that taking baby steps, i.e., commit to the ARFer role with one colleague initially and add more colleagues when they are getting used to the role (at a pace that suits them and so they should not be rushed or put under pressure) could prove to be more effective. Thus, future implementations should place focus on discovering the optimal balance of ARFer enablers and NonARFer counterparts, and the gradualness of introducing the commitment, in order to facilitate the most positive outcomes.

“If the default language is Welsh, or if a coerced choice (splash screen) model is offered, the acceptance and take-up is likely to be much higher” (Evas & Cunliffe, 2017, pp. 73-74). Rather than one or the other, this study simultaneously implemented both the default choice model and the active choice model⁷⁷. The default language was Welsh for the ARFer enablers during the intervention phase. However, the NonARFer participants were following the active choice model for language use across all study phases. That is, they had to make a conscious decision as regards the language through which they both initiated conversations and responded to others (this was the case even when ARFer enablers used Welsh with them). Given the increased use of Welsh by both the ARFer enablers and the NonARFer participants, the author argues that this serves as evidence that the ARFer programme generally shifted the department’s LHC and offered the employees (that used English as a habit) a new way of working, i.e., through Welsh. The implications of this can be far reaching. Organisations in Wales that aspire to increase their bilingual status could implement ARFer within some departments as a first step. If they experience success and gathered evidence on the success, the organisations could expand to other departments and replicate. If the second, third, fourth (and so on) implementation also demonstrates success, the organisations would collectively have a large bank of evidence that ARFer has evolved their bilingual status away from ‘nominal bilingualism’ towards ‘active bilingualism’. This evidence could therefore serve as the basis to include the implementation of ARFer within their policies of operation and, eventually, more organisations might follow this model. This would further contribute to the expanded impact of such evidence-based language interventions, pushing the linguistic snowball as it rolls along and grows ever larger.

⁷⁷ See Chapter 1 for a discussion on these models.

The simplicity of the ARFer methodology is a notable strength. One of the biggest challenges facing intervention science across social domains such as education, health, etc. is the ‘usability’ of interventions (see for e.g., Durlak & DuPre, 2008). This is not an issue for the ARFer intervention given its simplicity and its cost-efficiency. As such, ARFer is universally usable. The research team has also evolved from the Welsh mentoring scheme paradigm (see Study 1 & Study 2, Chapter 2, and Study 3, Chapter 3) by incorporating evidence-based principles derived from the behavioural sciences (i.e., making a commitment and default setting⁷⁸) as integral elements to the ARFer methodology. This illustrates a key difference between the behavioural sciences-inspired approach intent on specifically *increasing the active use of Welsh* used in this study, and traditional approaches with general intentions to *promote the Welsh language* (e.g., marketing campaigns). The research element of this study was therefore key and should be an integral element of future interventions implemented with intentions of increasing Welsh use. The implications of this is that this study, Study 1 & Study 2, Chapter 2, Study 3, Chapter 3, along with other future research, could make a significant contribution to the evidence base in terms of what elements of language interventions demonstrates success, thus contributing to how the Welsh Government are to achieve their Cymraeg 2050 goals.

⁷⁸ ARFer enablers voluntarily committed to use Welsh deliberately as the default language choice with all their colleagues under the right conditions (see grouping system).

The results of this study offer some initial and tentative evidence to suggest that straightforward programmes can significantly influence the prevalence of spoken Welsh within workplace contexts. Thus, interventions can shift the LHC when there is clear focus on developing simple yet effective ways to *enable* behaviour change. Further investment and systematic evaluations of evidence-based programmes (such as ARFer) are key to understanding whether increasing Welsh use within workplace contexts and beyond is achievable. Whilst Study 1 & Study 2, Chapter 2 contained inter-observer agreement (IOA: Cooper et al., 2014) at high rates, logistics prevented this in the current pilot study. Firstly, whilst the department that took part in this study was the same department that took part in Study 2, Chapter 2, a slight change in the observations zones occurred between the implementation of the two studies. Therefore, there was only room for one observer to be present at any one time throughout the entire duration of this study. This was even something that the director of the department posed as a term prior to beginning observations for this study, i.e., due to the lack of room, the director did not want more than one observer present at any one time. Secondly, the colleague that joined the author in Study 1 & Study 2, Chapter 2, had other commitments during the timeline of this study and thus was not able to accompany the author, or even to observe solo. Future implementations of observations-based language change interventions should endeavour to incorporate IOA in order to compare independently collected datasets and as a result increase the robustness of the research paradigm and the reliability of the collected data.

The author has already emphasised the importance of using objective observational methods derived from the behavioural sciences in order to measure language use behaviour in this thesis. However, the author embraced a ‘mixed methods’ approach in order to try to both understand and influence the LHC and the very complex issue of language choice and linguistic dynamics within the bilingual workplace for this study. The author did this by including a self-report survey (an indirect and subjective method) to supplement the observations (a direct and objective method). One of the benefits of including self-reports alongside observations was that the participants were more likely to actively think about their linguistic habits throughout the study in order to provide the most representative data. However, this benefit comes in tandem with a methodological issue. A possible consequence of this is that the act of doing so might have contributed to the impact of the intervention (this echoes the participant reactivity phenomenon). As such, future researchers could consider using self-reports to increase the odds of success rather than as a measure to analyse the level of success given their inherent limitations.

Beyond the timeline of this PhD studentship, the author has also conducted qualitative follow-up semi-structured interviews with some of the participants of this study ($n=12$), which is the focus of a forthcoming in-prep manuscript. In that study, the author explored, among others, the ARFer programme's potential long-term effect (beyond this current study's timeframe) on linguistic habits at work and whether participation had an impact on their Welsh use in other domains (i.e., behavioural spill over), e.g., in social situations, when accessing services, at home. This also affords the opportunity to explore further their viewpoint, as opposed to (and in addition to) the viewpoints of the research team, as regards participant reactivity. The author's general feeling of what the participants said during these interviews, without having transcribed the interviews, suggested that the author's presence did have an influence on their behaviour for the first ~2 weeks of the baseline phase, but this more or less disappeared afterwards.

The participants were also honest with the author in terms of their criticism of the questionnaire. That is, the participants generally admitted that they were not putting full effort and focus into completing the questionnaire as accurately as possible. The requirement to complete the questionnaire as late as possible into their working week was a burden: all they wanted to do at that point was switch off and leave in order to start enjoying their weekend. They suggested that, even if they did put a wholehearted effort into responding as accurately as possible, they did not monitor their language behaviour with their colleagues throughout the week in order to be able to do so. The participants generally admitted to hesitantly opening the questionnaire and completing it as quickly as possible without putting much thought into their responses. This echoes the suggestion by Elin in Study 3, Chapter 3, that some things are sometimes just a tick-box exercise. The author argues, therefore, that it is plausible that the observations element actually clashed with the questionnaire element. That is, because there was a dedicated researcher at the department, whose sole purpose for being present was to collect language use data (which the participants were fully aware of), the participants did not feel that they also needed to monitor their language use behaviour thoroughly. The participants supported this during the interview process: the author showed them a weekly percentage of their responses with each of their colleagues, to which many admitted that their gut told them that this was not how they remember things during the ARFer timeline. This echoes the phenomenon of the bystander effect/pluralistic ignorance (Gleitman et al., 2011), i.e., the participants did not focus fully on the questionnaire element because someone else, the author in this case, was fully dedicated to doing exactly that. These insights also contributed to the research team deciding not to analyse the questionnaire data in detail for this chapter.

Despite the participants being critical of the questionnaire element of this study during the interviews, the research team would also be able to intertwine both quantitative (focussing on the observations) and qualitative data to support each other (hopefully), e.g., what the participants said (qualitative) matches with what the observations data suggests (quantitative). The lessons that the research team and readers alike can learn from the amalgamation of the current and future datasets can therefore help shape the adaptation and future implementation of the ARFer programme and other language change interventions.

The research team are also exploring the potential strategy for a future ARFer programme adaptation by implementing a ‘train the trainer’ regime. The research team, among other interested researchers, need to replicate the positive results from this pilot study and extend the evidence base to different contexts, such as educational and clinical settings, as well as to different regions across Wales. These replications are currently underway by the author within a variety of locations across Wales in order to gather more evidence on the potential influence of ARFer and to learn more about what about the ARFer system works/does not work, and how/why. The research team will eventually be able to assess the impact of the ARFer methodology on employees not within typical office-based workspaces. It is possible that ARFer will not work in the same way within different contexts, e.g., clinical or educational settings, and the remote context (e.g., working from home), which is especially relevant given the events of 2020, i.e., covid-19, which forced many employees to leave the traditional workplace (e.g., the office) and work from home/remotely. This continues to be the case at the time of writing and is becoming a new norm in itself. Such results will present further opportunities to explore the potential impact of ARFer in more dynamic workplaces and remote working contexts. This can lead to careful adaptations and tailoring to the ARFer methodology in order to better suit the individual and unique nuances of the specific workplace context in which it is implemented and, in due course, non-workplace contexts, e.g., at home, with school pupils, in social situations. The implications of the evolution of ARFer in terms of its methodology itself, and in terms of the context in which it operates, can make a significant contribution to theme 2 of the Cymraeg 2050 strategy (WG, 2017) by increasing Welsh use across the board.

It is also of utmost importance that future implementations of the ARFer programme among other language change interventions consider incorporating control groups as an integral element of the research design. Comparing a group of participants that undergo some form of intervention (experimental group, in this case the ARFer commitment) with a different group of participants that do not undergo intervention⁷⁹ (control group) would afford the opportunity to evaluate the effectiveness of the intervention with more confidence (Gleitman et al., 2011; Gravetter & Forzano, 2009). In this case, this would be evaluating the effectiveness of the ARFer commitment on a group's linguistic dynamic. If the experimental group's use of Welsh were to significantly increase during the intervention phase compared to the control group, the research team would be able to more strongly and more confidently infer that it was the ARFer commitment that caused this (Elmes et al., 2003; Hewitt & Cramer, 2011). Some might interpret the lack of control groups within this pilot study as a weakness in its design. However, this was impractical given the research team's circumstances at the time of implementation. See Chapter 5 for a discussion on utilising control groups.

⁷⁹ In this case, the author could collect the experimental group's linguistic dynamic (baseline, intervention, post-test) at the same time of collecting the control group's linguistic dynamic (where the phases would not change).

Conclusion

Increasing Welsh use across all workplace sectors is a strategic priority and a key context within the Cymraeg 2050 vision (WG, 2017). There is a clear correlation between the ARFer programme and increasing Welsh use. One of the most significant contributions of this study is that it offers initial evidence of the magnitude of impact that Welsh speakers can have on the linguistic dynamic within their workplace with respect to increasing the active use of Welsh by adopting a simple commitment to actively use Welsh as the default language choice. The ARFer programme enables Welsh speakers to honour a commitment to use Welsh. This can complement and enhance language-driven interventions being implemented by aspiring organisations nationwide, thus making a significant contribution to their attempts to realise their linguistic goals as linguistic habits. The ARFer system, therefore, holds the potential for becoming common practice, if not good practice, as regards increasing Welsh use within bilingual workplaces nationwide. The possible implications of implementing ARFer therefore serve as a strong candidate for achieving the goal set out in the Cymraeg 2050 strategy of increasing Welsh use in workplace contexts.

The use of Welsh amongst the participants of this pilot study more than doubled during the post-test phase as compared to the baseline phase. This initial result indicates that the ARFer programme, as a language change intervention, generally shifted the department's LHC in favour of Welsh. This demonstrates the potential value of Welsh speakers using Welsh at work. As the data indicated, this can ignite behavioural spill over. The author refers to this in the language use context as a 'linguistic snowball effect', i.e., NonARFer participants mirrored⁸⁰ the ARFer enablers' increased use of Welsh (see Chapter 1 for a discussion on the linguistic snowball effect). This ripple effect is evidence of the value of using Welsh spilling over onto the NonARFer participants' linguistic behaviour, even when they conversed with other NonARFer participants. As previously mentioned, the author is currently implementing ARFer with a variety of partners in order to build a larger evidence base on its impact. The ARFer programme has the potential to make a significant contribution to the realisation of the Cymraeg 2050 vision of increasing Welsh use given its simplicity, cost-efficiency, and wide replicability.

⁸⁰ One might consider this as an example of the chameleon effect: see Chapter 1.

Chapter 5: General Discussion

The overall aim of this PhD project was to begin the journey towards bridging an evident gap in the behaviour change literature in terms of promoting the use of one language over another language. The lack of systematic evaluation of language interventions means that adequately assessing their impact on changing language choice was not possible. This poses an issue in terms of rationalising implementing such costly interventions. As such, this PhD began developing a behaviour change programme that included the foundations for evaluating its efficacy in terms of shifting the linguistic habit context (LHC) in workplace settings.

Given the lack of data available on such interventions, and the methodological issues of self-report methodologies, the studies within this thesis prioritised conducting real-time *in situ* observations in order to gather data on language choice behaviours. At the time of writing this thesis, the PhD team knew of no intervention-based research that attempted to change language choice, where researchers directly measured this potential change via real-time observations of conversations.

Three empirical chapters, which included four studies⁸¹, make up the core of this thesis. After developing the BiLIDOT (see Appendix A) as a measure to quantify language choice behaviours via observations, Study 1, Chapter 2 put the BiLIDOT to the test before Study 2, Chapter 2 used the BiLIDOT during multiple study phases of the Welsh language mentoring scheme. This enabled between-phase comparisons, and thus enabled the evaluation of the potential impact of the scheme on Welsh use. Whilst Study 3, Chapter 3 took a different direction, i.e., qualitative semi-structured interviews with the participants of the

⁸¹ Chapter 2 contained two studies.

Welsh language mentoring scheme, Study 4, Chapter 4 returned to utilising the BiL DOT in order to evaluate the pilot implementation of the ARFer programme.

Study 1, Chapter 2

The first step in the journey to bridging the gap between conducting language interventions and evaluating their efficacy was to develop a measure that could enable robust evaluations, and one that did not depend on self-report data and the inherent issues with this type of approach. The natural step to follow such development was to test the measure, i.e., the BiL DOT (see Appendix A). Study 1 was the initial test of the BiL DOT, and it was the first study to explore actual linguistic behaviour via quantitative *in situ* observational means. The BiL DOT enabled the extraction of the collected data in order to paint a picture of the linguistic habits⁸² of the participants of study 1 based on their fluency level in Welsh and separately on the basis of whether they were mentors, mentees, or not participating in the Welsh language mentoring scheme.

Study 1 advocated the practicability of the BiL DOT in terms of its ability to behave as a measure to collect quantitative language use data via direct observations. The BiL DOT, therefore, seemed to be a practical and useful measure to collect language use data during multiple study phases and, by analysing the between-phase data thereafter, better enable the evaluation of the real impact of a language intervention, as opposed to perceived benefits.

⁸² As it were, some of the participants of Study 1, Chapter 2 had registered on the Welsh language mentoring scheme. However, observations occurred only when the scheme was active.

Study 2, Chapter 2

The next natural step, therefore, was to use the BiDOT in study 2 in order to evaluate the potential impact of the Welsh language mentoring scheme on Welsh use. Analysis of the data suggested that there was a main effect of study phase on Welsh use, i.e., the use of Welsh was significantly higher during the intervention and post-test phases as compared to the baseline. In addition, two observers collected the same data side-by-side, yet independently, for 20% of the observation sessions during the intervention phase. That the IOA data matched at a rate of 96.2% suggests that using the BiDOT was practical in terms of the data it was able to collect and that using it is a easy process.

One might argue that the results of both studies in Chapter 2 (study 1 and study 2) serve as evidence that the BiDOT is a practical and useful measure for collecting data on language use via observations. It allows researchers to collect data during multiple study phases in order to evaluate the potential impact of a language intervention, such as the Welsh language mentoring scheme, on Welsh use. Based on this, the contribution of study 1 and study 2 lies in the initial steps towards developing robust evaluation methods of the potential impact of language interventions, and that via observations, as opposed to the naïve implementation of language interventions without systematic evaluation of their efficacy.

Study 3, Chapter 3

The importance of harnessing the observational methodology in order to gather language use data is a focus throughout this thesis. However, in addition to the perspectives of researchers via analysing between-phase data in order to evaluate the impact of a language intervention, it is also important to recognise and understand the perspectives of the participants on language interventions in order to inform development. As such, Study 3, Chapter 3 implemented a qualitative semi-structured interview with the participants ($n=25$) of the Welsh language mentoring scheme (from Study 1 & Study 2, Chapter 2) not long after the

scheme had officially ended. This was a systematic use of qualitative methods to explore the perceptions of the participants and use these perceptions to inform the development of language mentoring schemes.

One of the themes that emerged from study 3 echoes the view that this thesis has already mentioned, i.e., changing language habits is not easy due to the LHC effect. That the participants almost demonstrated a collective understanding of this difficulty clarified why changing languages was difficult and, therefore, why there is a need for language interventions (such as the Welsh language mentoring scheme) in order to break those barriers and develop a more flexible linguistic context in the first place. The other two themes from study 3 broadly reflected the perceptions of the participants of the Welsh language mentoring scheme, (a) benefits of the scheme, and (b) limitations of the scheme. Overall, the testimonies by the participants indicate that they were of the opinion that the scheme had a positive impact on Welsh use, which is in accordance with the quantitative results of Study 2, Chapter 2, despite their opinions in terms of the limitations of the scheme. The amalgamation of this valuable information serves as the evidence in terms of how to develop language interventions in the future and increase their odds of success by harnessing (and perhaps developing) the benefits of the scheme and removing/improving the limitations of the scheme. The opinions of the participants contributed to not only the development of the pilot of the ARFer programme (Study 4, Chapter 4); they also made a significant contribution to the author, along with the research team, deciding to putting practical arrangements in place in order to implement the ARFer programme pilot.

Study 4, Chapter 4

The Aldahitz project (originally conducted by Soziolinguistika Klusterra of the Basque Country: Jauregi & Superbiola, 2015; Superbiola, 2016), elements of findings from Study 3, Chapter 3, and two key elements of behaviour change science (default setting and making commitments) inspired the ARFer programme. Similar to Study 2, Chapter 2, multiple study phases were integral to the pilot of the ARFer programme in order to evaluate its potential impact on Welsh use. The participants completed a weekly questionnaire (see Appendix U for an example) in order to share their own perspectives on internal language use. In keeping with the observational focus throughout this thesis, the BiLDOT (see Appendix A) also played a key role in order to collect language use data during the implementation of the ARFer programme via direct *in situ* observations. According to the observations data, the use of Welsh by the participants to initiate conversations more than doubled during the post-test phase as compared to the baseline phase. This suggests that the ARFer methodology shifted the LHC of the participating department towards Welsh.

Limitations, Implications, and Future Directions

This thesis, along with any other piece of academic work, comes with its fair share of limitations. The author included most of these limitations in each of the empirical chapters, along with their implications and some ideas as regards future directions in order to tackle these limitations and develop future research in this important domain. This section summarises these limitations, implications and future directions and includes some additional limitations and future directions not included within the empirical chapters.

Study 1, Chapter 2.

The observed sample in study 1 happened to include more fluent participants ($n=11$) than non-fluent participants ($n=5$). This imbalance is an interesting matter and suggests a future research direction, i.e., comparing bilingual workplaces that have a mixed linguistic composition with bilingual workplaces that have a similar linguistic composition. These might reveal different linguistic dynamics and would offer the opportunity to explore the reasons why, e.g., the workplace environment in general, personal relationships amongst the staff, leadership level of staff that are more senior, and confidence levels and willingness of staff to use Welsh. This exploration could suggest what sort of mixture of workers would be optimal for promoting and facilitating Welsh use.

Exploration of the data gathered for study 1 revealed interesting linguistic patterns. For example, 73% of conversations amongst fluent dyads were in English. This suggests that this linguistic dynamic is the result of habit formation at the outset of establishing a relationship with someone (echoing the suggestion made by Jones & Morris, 2007, and Pujolar & Puigdevall, 2015). As such, future research could focus on dyadic conversations that occur in the infancy of their relationship in order to explore how long it takes to establish linguistic habits. This could introduce evidence to support the suggestion that language choice is ingrained early and therefore becomes the default early. Interesting linguistic patterns also emerged for mentors (as a category of participants) in addition to fluent participants. That is, 88% of conversations amongst mentor dyads were in Welsh as compared to 18% of conversations amongst fluent dyads. The suggestion here aligns with a self-fulfilling prophecy effect of occupying the label of being a mentor influencing Welsh use in a positive manner. As such, an interesting direction for future research is to explore the potential effects of linguistic labels, such as mentor/mentee, fluent/non-fluent, etc. on language choice behaviour. However, this will require more detailed definitions of language profiles (see Language profiling), which could be integral parts of employee profiles. In turn, being able to see a colleague's profile, and thus their language preferences for a variety of situations/contexts, etc. might cause some people to use Welsh with a colleague, where English would have been their automatic choice without this information.

Study 2, Chapter 2.

The significant difference between the post-test data and the baseline data for study 2 indicated a longer-term impact (beyond ending the scheme) of the scheme on Welsh use. In addition, the lack of a significant difference between the post-test data and the intervention data suggests that removing the scheme did not return the language choice behaviours to the baseline levels. The BilDOT allowed the author to conduct appropriate analysis in order to reveal these differences. This has implications for moving forward in this important research domain. Due to the results of this study, there now is a tentative evidence base that such an intervention can ‘work’. As this thesis had already pointed out (see Chapter 1), language interventions generally have not collected data in order to conduct proper evaluation of their impact on the behaviours of those receiving the intervention. Organisations could learn from this and ensure that they put appropriate measurement systems in place in order to contribute to the evidence base and evaluate the impact of interventions on the language choices of the employees. However, further quantitative data on the potential further impact of the Welsh language mentoring scheme of this study (beyond the post-test timeframe) is unavailable⁸³. Practical reasons at the participating department meant that conducting a follow-up study phase some months after the ending the post-test phase was not possible. Future studies should therefore endeavour to include a follow-up phase in order to explore the potentially longer-term impact of language interventions. The implications of organisations conducting follow-ups after implementing a language intervention would be significant in terms of contributing further to the evidence base, and in terms of kick-starting the process of considering editing the way in which the organisation conducts its business as stated out in its policy of operations. That is, by including such evidence bases, alongside instructions of how

⁸³ Some of the participants testified during Study 3, Chapter 3 that they continued with the mentoring after the scheme officially ended.

to implement language interventions within the policy, the use of Welsh might increase across the organisation because it is a part of the policy and because there is an integral system of evaluation in place.

Study 1 & Study 2, Chapter 2.

Study 1 and study 2 were the first studies to utilise the BiDDOT. In its current form, the data collected by the BiDDOT revealed interesting behavioural patterns upon exploring the raw datasets across each study. For example, participants sometimes switched to Welsh during a conversation. Sometimes their target interlocutor would stick to English, other times they would respond and switch language. The presence of others seemed to instigate a Welsh response. The implications of this is that the BiDDOT in its current form, despite the author conducting such analysis, can allow robust analyses of language choice behaviour in the future and factor in the presence/absence of others. Returning to the topic of organisations potentially editing their policies of operations, this could also have an influence on the editing process. Future studies should explore the impact of the presence/absence of others within the immediate environment on language choice behaviours, among various other potentially unknown factors in order to understand what factors play a role in language choice behaviours better and how much of an impact these factors have on language choice behaviours. Insights into the potential impacts of such factors could instigate a change in how organisations design where people sit within offices. For example, one might find that having people located on desks in such a way (which might become clearer with further research) would promote the internal use of Welsh to its optimal level. The implications of these two studies, therefore, have the potential to kick-start a change in how organisations conduct their business in terms of language policy and, as such, has the potential to have a far-reaching impact.

Overall, study 1 and study 2 clarified the importance of utilising and harnessing systemic methods in order to evaluate the potential impact that language interventions might have on language choice behaviours. This would make a significant contribution in terms of building an evidence base regarding what sorts of interventions can increase Welsh use in workplace contexts and, by doing so, help achieve the goals of theme 2 of the Cymraeg 2050 strategy. One option is to build this evidence base by utilising the BiDDOT as a measure to observe and collect language choice behaviours *in situ* as opposed to utilising self-report methods. Study 1 and study 2 advocated the BiDDOT as a means to collect evidence on the behavioural impact of a language intervention. For example, the linguistic patterns that emerged from the data that the BiDDOT was capable of collecting. The implications of this is that the BiDDOT holds the potential to gather detailed data on the unique nuances of linguistic dynamics in linguistically diverse settings. As such, future research should consider utilising the BiDDOT, in addition to contributing to its development.

Study 3, Chapter 3.

One clear implication of the qualitative results of study 3 is that they serve as evidence of the positive impact of a language intervention, namely the Welsh language mentoring scheme. As such, it bridges the gap that exists in the literature between implementing language interventions and evaluating perceptions of their impact. The implications of this is that, in addition to the positive results of Study 2, Chapter 2, a separate group of participants testified to the positive impact of the scheme. Therefore, the evidence base has grown slightly larger. However, the dataset represents the entire sample as opposed to splitting the perceptions of the mentors and the perceptions of the mentees for comparison. Future research should separate the opinions of participants based on their separable statuses (for example, mentor and mentee) in order to explore potential disparity. Interviewing mentor-mentee pairs would also be an option as opposed to interviewing individuals. In addition, the data does not clarify whether this positive impact extended beyond the mentor-mentee dynamic, i.e., behavioural spill over.

One might argue that, on the one hand, the data that emerged in Table 13 and Table 14 did not suggest a behavioural spill over in terms of language domain. That is, the participants' increased use of Welsh as a function of participating in the scheme did not spill over into their language choice behaviours in the written/reading domain. The implication of this is that future research could consider implementing a more 'whole' approach to language intervention by attempting to influence the language choice behaviours of workers both verbally and for reading/writing. On the other hand, however, the language choices made by Hannah (Table 14) for completing each element of the study has significant implications in terms of demonstrating a level of success to the scheme, despite its limitations. As such, future research could learn from this by removing the limitations from an intervention and by improving the elements that the participants of the current study believed worked well.

It is unclear how or why the participants benefitted from the scheme because no in-play data was available in terms of the behaviours of the participants in relation to the scheme. This poses a limitation to study 3. Future research should gather data during the implementation of language interventions as opposed to, or in addition to, collecting the data beyond the timeframe of the intervention. For example, replicating this study with the participants of Study 2, Chapter 2 would have provided both multi-phase quantitative data on the impact of the scheme, and qualitative data on the perceptions of the participants of the impact of the scheme. This mixed methodology has the potential to provide a much more robust evidence base, especially if both datasets are congruent. The qualitative aspect could also occur at the same time as the quantitative aspect rather than after ending the intervention. This would offer the opportunity to explore factors such as how often the participants are adhering to the intervention and whether they are enjoying the intervention and have good relationships with each other (which were unknown for the participants of Study 3, Chapter 3). However, this could in itself facilitate and influence the impact of the intervention on Welsh use.

Despite the limitations of study 3, one of its significant implications emerged within the testimonies of the participants. A clear theme that emerged from the dataset was a collective feeling amongst the participants that echoes the LHC effect, i.e., the difficulty of changing from one language to another language with interlocutors habituated to one language. Participants of this study echoed what has emerged in other studies in terms of why it is difficult to change from one language to another language with someone. For example, once people have 'set' a language for their relationship, which often becomes ingrained as an integral part of their social connection (often after the first time they meet: Jones & Morris, 2007; Pujolar & Puigdevall, 2015), it is just difficult to change to another language (Altuna & Urla, 2013; Evas & Morris, 2017; Jauregi & Superbiola, 2015; Jones & Morris, 2007; Thomas & Roberts, 2011). Attitude was another factor for why participants of this study found it difficult to change language. A study by BBC Cymru Wales, S4C, and WG (2013) suggested that a positive attitude towards the Welsh language could encourage people to use it. However, the opposite emerged in the testimonies of the participants of this study. This has significant implications for future research. That is, in order to increase the odds of increasing the use of Welsh, language interventions must also include elements that would instil a positive attitude towards the Welsh language prior to trying to increasing the use of Welsh. Familiarity with interlocutor seemed to be a factor that made it difficult for one to switch language. This echoes a suggestion made by Evas and Morris (2017), i.e., the language that someone uses to converse with someone can influence the language they get in response. That is, if one has a strong familiarity with one's interlocutor, choosing an unfamiliar language would be more difficult as compared to changing language with someone with whom they are not as familiar.

In addition, the participants shared their perceptions of the scheme. These formed two themes, namely the benefits of the scheme and the limitations of the scheme. These testimonies serve as evidence of what worked well, and what needed improving. Whilst the participants enjoyed taking part in the scheme, they generally believed that the scheme did not encourage them enough and that it needed more structure. In addition, some participants believed that one of the biggest motivators for taking part was that it afforded them extra time away from work. As such, the participants might not have made the most of the potential of the scheme in terms of helping them develop their Welsh skills. The implications of these testimonies are that future researchers can apply these lessons in order to design the best possible language intervention. Specifically, given that some of the participants enjoyed getting a break from work due to taking part, this could be included as a reward for taking part and additional rewards might vary based on how the participants are developing and how much engagement they show in terms of demonstrating their progress.

Study 4, Chapter 4.

The implications of the findings of Study 3, Chapter 3 directly fed into the design and implementation of the pilot of the ARFer programme (Study 4, Chapter 4). The ARFer commitment (and therefore the intervention overall) was active all the time⁸⁴ during the intervention phase. The participants did not need to schedule ‘sessions’ as they did in the language mentoring scheme in order to benefit from the approach of the intervention. Rather, the ARFer commitment was a constant element throughout the entire workday. This meant that the participants could not rationalise leaving the workplace in order to have a ‘session’ and as such fulfil a requirement of the programme. On the one hand, the implication of this consistency is that the ARFer system can become a staple feature within the working lives of the participants and, arguably, has the potential to become the norm. The possible implication of this is that the artificial nature of ARFer might not be as prominent in comparison to the artificial nature of the Welsh language mentoring scheme, which some of the participants in Study 3, Chapter 3 believed to be the case. On the other hand, taking a step back from asking ARFer enablers to adhere to their commitment with all eligible staff might have more of an impact due to the ‘intensity’ of the intervention growing as time goes by. That is, adhering to the commitment only with specific agreed people, and then adding more people as the ARFer enablers become used to and comfortable with their role. This is certainly a direction for future research in order to explore how to optimise the ARFer system.

⁸⁴ However, see grouping system.

The main strengths of the ARFer methodology is its replicability, usability, simplicity, and cost-efficiency. Therefore, the implications of the results of the ARFer pilot, i.e., the LHC shifted because Welsh use increased significantly simply by encouraging a proportion of staff at a workplace to make a language commitment, are significant to the bigger picture of the Cymraeg 2050 strategy. However, there is scope to strengthen the ARFer paradigm. One limitation to study 4 is that systematic processes for nominating ARFer enablers, and how many of them should assume the role, was missing. It is possible that there are people that would make good ARFer enablers and others that would make poor ARFer enablers based on certain skills. Future replications of the ARFer programme should therefore consider incorporating these elements into the research design in order to learn what elements of the enabling were impactful.

The increase in Welsh use in study 4 was not exclusive for the ARFer enablers. NonARFer participants also increased their use of Welsh. This is an example of behavioural spill over, which in general had an impact on the linguistic dynamic at the department overall. This has notable implications, mainly that the ARFer programme has the potential to shift the LHC of an entire workforce. Given that the Cymraeg 2050 strategy aims to increase Welsh use in workplaces, this makes a significant contribution in terms of providing an evidence base of an intervention that can facilitate achieving this aim without significant costs. Ultimately, this can become commonplace throughout Wales and perhaps become integral elements of the policies of operation in place at workplaces.

A central aspect of this thesis is the importance of shifting away from commonly used self-report methodologies. Study 1 & Study 2, Chapter 2 did so by adopting an observational methodology. Whilst this was also true of study 4, the participants also completed similar questionnaires to those questionnaires used in the Aldahitz project (Jauregi & Superbiola, 2015; Superbiola, 2016). Thus, self-report data and observations formed the dataset for study 4. However, given the issues of self-report methods, and the testimonies of some of the participants during a follow-up study (see Chapter 4 Discussion), the results section of Chapter 4 put more focus on the observations.

In hindsight, the author missed an opportunity to make detailed comparisons between the observational data and the self-report data. This was a fundamental limitation to study 4. Upon a quick analysis, the datasets overlapped sometimes, whereas at other times the datasets differed (see Table 20). Future studies that simultaneously adopt self-report and observational methodologies, or any other mixed approaches, should explore the congruence between the different datasets in more detail, in addition to exploring the potential impact that completing self-report questionnaires regarding the linguistic dynamic of a workplace might have on the behaviours of participants. In addition, the author missed an opportunity to explore certain behavioural trends (such as the ones described in General Discussion for Study 1 & Study 2, Chapter 2) for this study. This interferes with the author's ability to interpret the dataset more robustly. The development of the BilDOT, and gaining experience in using the BilDOT, would strengthen one's ability to note such behaviours in detail during observation sessions. Future research should make more use of this in order to look deeper into the nuances of the language trends of employees on a more individual basis.

Embrace participant reactivity.

Whilst there is a short reflection on the issue of participant reactivity within this chapter, this phenomenon also poses some optimism for language interventions. Research suggests that the Hawthorne effect can play a significant role in promoting certain behaviours. For example, complying with hygiene protocols (hand gel) in clinical settings (Eckmanns, Bessert, Behnke, Gastmeier, & Rüden, 2006; McDonald, Smyth, Smyth, & Lee, 2018), prevalence of adolescent smoking (Murray, Swan, Kiryluk, & Clarke, 1988), and oral hygiene treatments (Feil, Grauer, Gadbury-Amyot, Kula, & McCunniff, 2002). Future language intervention research could deliberately harness this phenomenon because it can contribute to behavioural change. The author took steps to limit reactivity as much as possible and not to interfere with the participants for the sakes of the validity of the results for the studies included within this thesis. However, future researchers could do the opposite, i.e., adopt an 'active' researcher role during observations in order to embrace the phenomenon of participant reactivity. Should this contribute to behavioural change, habit forming might follow. Once the habit has changed, it is plausible that weaning the presence of the researcher away from the setting would not have a significant effect on the behaviours of the participants, i.e., the use of Welsh would not return to baseline levels.

Audio-visual technology.

One of the considerations for future directions in this important domain is to shift away from observational methods due to its issue with participant reactivity. Whilst there are steps that observers can take in order to minimise reactivity, assessing the true impact of the presence of observers on the behaviours of participants is also challenging. Realistically, common sense dictates that removing the phenomenon of reactivity is extremely difficult. One method to remove reactivity is to use cameras to collect language use data. One benefit to this would be the ability to double-check the footage in order to assess the accuracy of data collection. This would also allow researchers to collect data that are much more detailed. For example, as opposed to simply noting the language used, the footage would allow researchers to note the number of words uttered per language for each interaction and conversations including more than two people⁸⁵.

In reality, this would be the best method in terms of collecting data that would best represent the natural behaviours of those under study and would provide the most detailed data on language use. However, future research that use audio-visual technology (such as cameras) in order to gather data would need to ensure that the individuals under study were fully aware, and fully consent, to there being a camera recording their behaviours at their workplace at all times. With time, workers might forget about the camera and, as such, being aware of the camera would not influence their natural behaviours. This would provide data that would more likely reflect their true behaviours.

⁸⁵ In its current form, the BiLIDOT cannot collect data with this level of detail. For an example of previous work that collected data that are more detailed, see Thomas et al. (2012). Other variables of interest that one could consider collecting through the development of the BiLIDOT (and incorporating audio-visual technology in order to assist in the data collection process) include: the duration of conversations; length of utterances; conversation topic (in order to consider the complexity/technicality of interactions: see also General Discussion in Chapter 2); conversations including more than two people; conversations that are not face-to-face, and; quality/standard/'correctness' of the used language.

Language profiling.

One of the general limitations of the studies within this thesis are how the author defined the language profile of the participants. In Study 1 & Study 2, Chapter 2, and Study 3, Chapter 3, the author was able to give the participants a label that coincided with their role on the Welsh language mentoring scheme, i.e., mentor, mentee, not involved in the scheme. Similarly, the author was able to label participants in Study 4, Chapter 4, based on whether they were ARFer enablers or not. However, the author also broadly defined the participants in Study 1 & Study 2, Chapter 2, and Study 4, Chapter 4, based on their Welsh fluency, i.e., Fluent in Welsh, or Non-fluent in Welsh. Whilst these are categorically separable, these broad and subjective fluency categorisations do not provide detailed information on the language profile of the participants. The author broadly categorised the participants based on their fluency. However, the language profile of an individual is much more nuanced on the ground.

The results of Study 1, Chapter 2 suggests that mentors used English for nearly 90% of the time to initiate conversations with mentees. The author suggests in the Discussion section of Study 1, Chapter 2 that this might have been a self-fulfilling prophecy effect, i.e., because the mentees occupied the mentee label. However, more information about the participants on an individual level, e.g., language preferences, learning history, willingness and confidence to use languages based on situation, target interlocutors and experience, language ability in order to discuss simple/complex matters, etc. would allow a deeper exploration of why mentors predominantly used English with mentees. That a clear and systematic definition of language profiles was not included as integral elements of the studies within this thesis is a fundamental limitation that restricted the author's ability to conduct more robust data analysis in order to make conclusions that are more robust. In hindsight, the author believes that having language profiles that are more detailed for the participants of

Study 4, Chapter 4, would have permitted an exploration of what language profiles could be more accurate in terms of reporting their language use behaviour on the questionnaire in addition to conducting data analysis on an individual level.

Future studies that implement language interventions should endeavour to collect data that are more detailed in order to categorise and define the language profile of each participant. A general direction to improve the robustness of research in this important domain is to develop an understanding of language profiles. There needs to be standardised languages profiles that have clear definitions. Researchers could do this by asking the participants to complete a language profile questionnaire prior to beginning the study. Asking the participants to complete a language profile questionnaire prior to beginning each study phase would allow researchers to compare their responses between-phases and explore any correlations between the questionnaire responses and the language use data. Researchers could benefit from elements such as Likert scales/open continua in order to explore, e.g., Welsh fluency/use, where one end of the scale would indicate a respondent is fully fluent and uses Welsh whenever possible, and the other end of the scale would indicate that a respondent has no understanding of Welsh whatsoever and therefore does not make any use of Welsh. These scales/continua could also explore other factors, e.g., first/second (and so on) language Welsh; where respondents are on their language learning journey (for example at the beginning, advanced, etc.) and how they are learning/have learned; how much a respondent can comprehend Welsh, and; the confidence level of a respondent in terms of using Welsh. The author believes that developing systematic language profiling systems is of utmost importance in this area of research. This would allow researchers to tailor their language intervention design in order to be as effective as possible based on the language profiles of individuals and subsequently analyse the data based on a variety of language profiles.

Control groups.

The implementation of language interventions and the element of evaluation do not typically go hand in hand. However, the studies within this thesis attempted to bridge this gap. That said, these studies did not adopt the gold standard within the behavioural sciences, i.e., randomised control groups. Generally, one might regard the lack of experimental control as a limitation given that the studies were intervention-based (see for e.g., the Discussion section of Chapter 4). However, it was impractical at the time to incorporate control groups as integral elements of these studies.

One of the key parts of this thesis was developing the observational measurement. As such, jumping into a robust experimental design in order to evaluate an intervention (without proper ‘shape’) is not possible because the absolutely best way of actually measuring the impact of the intervention on the dependent variable, i.e., language choice, is far from being available. As such, taking baby steps and conducting pilot studies was the logical approach with these studies. This has the added benefit of trying to formalise these elements, which also provides data on the impact of the interventions under study. Therefore, in terms of having more evidence-based approaches to increasing Welsh use, future studies should prioritise implementing experimental research designs with more robustness, such as incorporating control groups, in order to more robustly evaluate the effects of the intervention under study. Despite the challenges of doing this, especially in applied settings, incorporating control groups should be of utmost importance in the development of future research in this important domain.

‘Handling’ Participant Reactivity: A Short Reflection

Observations can cause participant reactivity. That is, the overt act of conducting observations might influence the behaviour of participants due to knowing that they are under observation (see for e.g., McCambridge et al., 2014). Thomas and Roberts (2011, p.98) indirectly provided an example of reactivity in the context of Welsh use in the minority language classroom, “many of the children were vigilant about their use of Welsh in the presence of the researcher, reminding each other to *Siarad Cymraeg!* ‘Speak Welsh’”. The consequence of this is that researchers cannot be 100% confident that participants behave naturally and ‘normally’ in their presence as compared to when they are absent. The author (hereafter referred to as the observer) took steps to establish rapport and build trusting relationships with the participants (mainly based on Oswald et al., 2014) in the observations-based studies within this thesis (Study 1 & Study 2, Chapter 2, and Study 4, Chapter 4) in order to minimise reactivity.

Prior to commencing data collection, the observer strategically discussed participant reactivity with the participants and the importance that they should not change their natural and normal behaviours (including their language choices) given its threat on the long-term robustness of the research. Long baseline phases also provided time and opportunity for the observer to immerse within the working environments of the participants and become ‘part of the furniture’. During observation sessions, the observer consciously avoided drawing the attention of the participants and did not initiate conversations with them. As a result, the participants sometimes ‘suddenly noticed’ the presence of the observer during an observation session. These accidental covert observation instances potentially eliminated participant reactivity.

Participants openly spoke about personal, private, sensitive, and confidential matters and often held heated debates, which sometimes approached the border of unacceptable workplace behaviour. Realistically, these incidents do occur as a norm in workplaces. That they did not tone it down or move somewhere else suggests that they trusted the observer and, as such, continued to behave in their normal manners. In addition, despite knowing that the aim was to increase Welsh use, Welsh speakers continued to speak English. Educating the participants on the phenomenon of participant reactivity counteracted the risk that they would behave in a manner that would provide good data just for the sake of providing good data. Not establishing a good rapport with the participants might not have resulted in this, and one could have questioned the validity of the results.

Overall, the presence of the observer did not seem to interfere nor bother the participants. The presence of the observer became commonplace within these workplaces after some time and thus became part of the norm. Additionally, because the observer was present across all study phases for the same reasons, this factor, and the reasons for being there (of which the participants were fully aware), remained consistent. One might argue, therefore, that differences within the data between study phases were not due to the presence of the observer because this factor did not alter between study phases. Therefore, the data is as real as they could be given the circumstances and testify that observers can take steps to handle participant reactivity, of which the most crucial are establishing rapport and building trusting positive relationships with participants (see for e.g., Oswald et al., 2014) in order to become 'part of the furniture'.

Researcher Positionality

For this final sub-heading of the thesis' General Discussion section, I will generally speak in the first person. I wish to use this sub-heading to clarify my own perception of my own 'place' during conducting this research. Researcher positionality refers to "the position that the researcher has chosen to adopt within a given research study" (Savin-Baden & Major, 2013, p. 71: as cited by Holmes, 2020, p. 2). As researchers, we "bring our own histories, values, assumptions, perspectives, politics and mannerisms into research – and we cannot leave those at the door. The topics we find interesting to research, and ways we ask questions about them, the aspects of our data that excite us – these (and many other factors) reflect who we are; our *subjectivity*. Therefore, any knowledge produced is going to reflect that, even if only in some very minor way. The same has to be said for participants in our research; they bring their own experiences, perspectives and values to the research. They're not robots; we're not robots – we're all living, breathing, subjective human beings, partial to our knowledge, and flawed." (Braun & Clarke, 2014, p. 36).

Along with the other members of the research team, I did not conduct this research in a vacuum. Rather, there are pre-existing factors that contributed to why I wanted (and therefore applied for) the PhD studentship in the first place, what I wanted to achieve throughout the PhD journey, how I (along with the research team) designed the studies, and how I analysed, interpreted, and subsequently reported/disseminated the results within this thesis. In addition, some of my own personal features might have contributed to how the research process developed, and how the participants perceived me as both a person and as a researcher. For example, I am a white, first-language Welsh man from Caernarfon that uses Welsh at every possible opportunity. I actively want to make a significant contribution in terms of helping the Welsh Government reach their 2050 goal of increasing the use of Welsh, and I am very open about this. This PhD studentship served as the opportunity to contribute to this goal, which on a personal and professional level, I find very important. The mere awareness by the participants in terms of knowing these things about me could have influenced how they behaved around me. It is therefore important to consider how I, as a person along with my personality and features such as the ones I mention above, might have influenced the research process and my interpretation of the results (though unintentionally, subconsciously, etc.).

The quantitative studies (Study 1 & Study 2, Chapter 2, and Study 4, Chapter 4).

Positionality is mostly a concept used in qualitative research, especially if they involve observations. Therefore, I believe that it is relevant to discuss it in the context of the observations-based quantitative studies. I have already discussed the steps I took in order to minimise participant reactivity in the previous sub-heading. This increased the odds that the participants did not behave in ways that would give me what (they thought) I wanted.

However, I put myself in a research position where I looked for something specific, i.e., language use. It is also clear from the beginning of this thesis that it is no secret that I want the Welsh language to survive, and that I want to contribute to helping it thrive. Therefore, prior to conducting these studies, I cannot deny that I was *hoping* that the results would indicate a level of success to the Welsh language mentoring scheme and the ARFer programme, nor can I deny that I was *hoping* that the observational rigour of these studies appear as a strong methodology for collecting language use data.

I needed to sit on the fence and be neutral in terms of data collection, i.e., be as objective as I could be and simply note down the facts (collect what is actually happening, regardless of the participants' language use behaviour). I also needed to be neutral in terms of analysing, interpreting, and reporting/disseminating the results. I did not let my personal feelings, nor my desire to see successful and impressive results, influence my data collection process, my perception nor my interpretation of the data and, ultimately, my conclusions in terms of the behavioural influences of these studies on the use of Welsh by the participants. Therefore, I believe that, despite my positionality, the data that Chapter 2 and Chapter 4 reports are as accurate a reflection as is possible of the behaviours of the participants during the observation sessions. I cannot dismiss that my positionality did not have any influence on the behaviours of the participants, however small it might have been. To paraphrase Braun and Clarke (2014), we are all human beings that have our flaws. We are not robots and, as such, anything and everything can influence both the behaviours and indeed the perceptions of researchers and participants of the world. I believe that embracing audio-visual technology would both minimise participant reactivity and limit researcher positionality.

The qualitative study (Chapter 3, Study 3).

I interviewed participants of two Welsh language mentoring scheme pilots (from two departments) in study 3 in order to collect first-hand information directly from them on the experience of being part of the pilot. Again, I put myself in a research position where I looked for something specific; in this case, feedback on the scheme, and I had to focus on that for the purposes of writing about it in this thesis. Given the design of the interview schedule (see Appendix O, Appendix P, and Appendix S), it was clear that I, along with the research team, was hoping to learn about both the benefits of the scheme, and indeed the limitations of the scheme. Again, I cannot deny that I hoped that evidence would emerge that supported the claim that the mentoring scheme was a success. As such, finding these elements occurred naturally whilst exploring the dataset. However, I clarified prior to starting every interview that I was hoping to get as much information as possible from the interviewee and that they could not provide incorrect responses. From my side as the interviewer, the interview was non-judgemental; from the interviewee's side, the responses were opinion-driven. I clarified that I wanted them, as the individuals that went through the experience of piloting the Welsh language mentoring scheme, to inform me of what about the scheme worked *and* what did not work, and the reasons behind this so that we can expand and enhance the scheme for future implementation based on their honest opinions. I believe that I did indeed sit on the fence between these two sides whilst exploring the data and reporting on them in the results section.

I have already emphasised in this thesis that changing language habits is difficult. Whilst it certainly was not intentional, one of the themes that emerged from analysing the datasets was that many of the participants spoke about this, despite questions that might prompt it not appearing in the interview. However, that I had an interest in this beforehand might have influenced me to have an unintentional ‘spotlight’ for finding examples that echoed this phenomenon within the datasets. Regardless, along with the research team, I decided that this was an interesting and important theme to include within the results section because it emphasised why researchers need to implement language interventions in the first place. I therefore believe that it neatly took its place within the overall narrative of this thesis.

Conclusion

Other language interventions have generally lacked robust methods of measurement in order to assess their potential impact and disseminate evidence. However, the studies within this thesis included a data collection element during multiple study phases in order to compare and assess potential impact. Evaluating the potential impact of interventions is not possible without first gathering baseline data. Attempting to derive evidence of causality by embracing established systematic research methods from the behavioural sciences in order to compare contexts before, during and following specific interventions with the same group of participants (within-group/repeated measures design) was therefore crucial to the designs of the studies within this thesis. Therefore, this thesis presents research evidence and offers the most detailed illustration of language use within workplace contexts in Wales to date.

Whilst the results of the studies within this thesis are promising, one must interpret them with caution. This PhD journey represents the very first steps in starting to test language interventions (such as the Welsh language mentoring scheme and the ARFer programme) and measurement systems (such as the BiDOT). However, these steps make a significant contribution in terms of developing pioneering research that has the potential to achieve the required step-change in Welsh language use in order to achieve a million Welsh speakers within Wales by 2050. The reality of the situation means that a one-size-fits-all solution will not emerge quickly. This research is constantly developing and is a steep learning curve. Arguably, the studies within this thesis took the first step to attempt to add a little bit of ‘science’ into evaluating the impact of interventions intent on promoting Welsh use. Through trialling, learning, developing, replicating – repeat – researchers in this domain might be able to create a ‘one-size-fits-many’ language intervention. Thus, continuing this research journey is of utmost importance.

Finding a ‘complete’ and fundamental answer in terms of how to get more people to use their Welsh skills is far away. However, the Welsh Government have set out a time-based target in the form of Cymraeg 2050. This gives researchers 29 years from the time of writing to get as close as possible to develop an extensive evidence base that contributes to this wider vision. The development of the BiIDOT offers a truly innovative approach to collect objective linguistic dynamic data across multiple study phases. In addition, the development of the ARFer methodology offers a truly innovative approach to directly impact language behaviour, and its simplicity means that it is widely replicable as a weapon to increase Welsh use. Future research can develop from this and make a significant contribution to increasing the possibility of realising the Cymraeg 2050 vision, in addition to developing robust measurement and evaluation systems. The importance of the work included within this thesis; the work on the ARFer programme, which has developed during a two-year post-doc (in its third year at the time of writing); and the work that is in the pipeline for the author and the supervisory team, is therefore highly significant. Clearly, however, there is more work to do over the years up until 2050.

It is vital to procure high quality systematic research that views language, and the choice of which language to speak, as a form of behaviour in order to develop strong evidence-based programmes on language behaviour change. Collaborations between research teams are essential in order to make systematic use of established research methodologies that help determine which aspects of programmes have the strongest influence on language choice (and within which contexts) in order to expedite the journey to evidence-based practice in this important domain. Other important domains highlight the journey to evidence-based practice, such as health (e.g., Thornicroft, Lempp, & Tansella 2011; see also the Medical Research Council⁸⁶) and education within Wales (e.g., Tyler et al., 2018). This approach will play an important role in the aspirations of the Welsh Government and the Cymraeg 2050 vision of having one million Welsh speakers and increasing the prevalence of Welsh use.

⁸⁶ <https://mrc.ukri.org>

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Appendices

Appendix A: The BiDOT

Study Phase:

Date:

Obs Start:

Obs End:

Location:

Conversation	Language		Participant (initiator)	Participant (target interlocutor)	Others Present	Other Qualitative/Additional Information about Context?
	W	E				
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						

Appendix B: MailTip Example

: "Rydw i'n siarad Cymraeg/I speak Welsh"

Anfon	At...	<input type="text"/>
	Copi...	<input type="text"/>
	Cudd...	<input type="text"/>
Pwnc		<input type="text"/>

: "Rydw i'n siarad rhywfaint o Gymraeg/I can speak some Welsh"

Anfon	At...	<input type="text"/>
	Copi...	<input type="text"/>
	Cudd...	<input type="text"/>
Pwnc		<input type="text"/>

Anfon	At...	<input type="text"/>
	Copi...	<input type="text"/>
	Cudd...	<input type="text"/>
Pwnc		<input type="text"/>

Appendix C: Study 1, Chapter 2 Information Sheet

School of Psychology, Wales Centre for Behaviour Change & Canolfan

Bedwyr

Bangor University

Information Sheet

Date: _____

PLEASE KEEP THIS INFORMATION SHEET FOR YOUR RECORDS

Title of study: Language Mentoring Scheme – What Linguistic Dynamic is Present at the Department? An Observational Study.

Investigators:

Dr. Carl Hughes, Director of the Wales Centre for Behaviour Change

Dr. Emily Tyler, Research Officer at the Wales Centre for Behaviour Change

Dr. Lowri Hughes, Director of the Language Scheme

Dr. Elin Walker Jones, Lecturer in Applied Behavioural Analysis

Arwel Williams, Ph.D. student, School of Psychology

You have been invited to participate in a research study. Before you decide to participate, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and, if you wish, discuss it with friends and relatives. Ask us if there is anything that is unclear or if you would like more information.

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Registered charity number: 1141565

ATHRO/PROFESSOR JOHN PARKINSON BA, PhD
PENNAETH YR YSGOL/HEAD OF SCHOOL

EBOST: seicoleg@bangor.ac.uk
EMAIL: psychology@bangor.ac.uk

www.bangor.ac.uk www.bangor.ac.uk/psychology

We are conducting this study on those who have volunteered to participate in the department's language mentoring scheme. We are particularly interested in discovering the natural linguistic dynamics within the department, i.e. which language, be it Welsh or English, gets used by who, with who, when, how frequently, and in what contexts. As you have volunteered to take part in the mentoring scheme, it is essential for us to learn what linguistic dynamic is already in place before implementing the scheme, so that discovering any changes in the dynamic during and after the scheme is a possibility.

We hope to obtain permission by all individuals involved so that the researcher can have access to places in the department to observe language use. The researcher will not be present to listen in on the contexts of your conversations, nor to judge in any way your use or quality of language – only the linguistic dynamic will be recorded. The researcher will not interfere with your work by talking or by deliberately catching your attention – carry on with your natural routines and try to ignore the researchers' presence. The researcher will circulate an email to everyone at least two days in advance to make you aware of where and when the observations will be conducted.

All records of language use will be treated with the strictest confidentiality: only the researchers will have access to this data. Written notes by the researcher will be transferred onto digital versions where all data will be treated with strict confidentiality. Upon creating anonymous digital versions of language use, the physical handwritten notes will be destroyed in a confidential manner. The data that will be collected during this methodology will be very valuable to include in the researcher's Ph.D. thesis, as well

as to the development of services such as mentoring schemes, promoting the use of the Welsh language and discovering the actual linguistic dynamics within bilingual workplaces, rather than language status only.

If you do decide to grant permission you will be given a copy of this information sheet to keep and will be asked to sign a consent form. You will be free to withdraw at any time without penalty, and without giving a specific reason.

This study has been reviewed by the Research Ethics Committee, Bangor University, and there is absolutely no risk of harm to you. However, in the event of any complaints arising concerning this research, please address them to Mr. Hefin Francis, School Manager, School of Psychology, Brigantia Building, Penrallt Road, Bangor, Gwynedd, LL57 2AS.

If you have any further questions regarding this study, please feel free to contact Dr. Carl Hughes, School of Psychology, Brigantia Building, Penrallt Road, Bangor, Gwynedd, LL57 2AS. **Ethics application number:**

Thank you very much for your interest.

Best,

Arwel Williams, Ph.D. student, School of Psychology.

Appendix D: Study 1, Chapter 2 Consent Form

School of Psychology, Wales Centre for Behaviour Change & Canolfan

Bedwyr

Bangor University

Consent Form

Date: _____

**PLEASE KEEP A SIGNED COPY OF THIS CONSENT FORM FOR
YOUR RECORDS**

Title of study: Language Mentoring Scheme – What Linguistic Dynamic is Present at the Department? An Observational Study.

Ethics application number:

I hereby consent to take part as a volunteer in the aforementioned study and confirm that I have read and understood the information sheet. The investigation has been fully explained to me by the investigator and I fully understand their explanations – my questions and/or concerns have been answered.

Initials _____

I understand that I can withdraw my consent at any time without any penalty and without providing a specific reason.

Initials _____

I understand that any data gathered from this study will be anonymised, and that it can and will be analysed and used in published work and as part of the investigator's Ph.D. thesis in a completely confidential manner with regard to my identity.

Initials _____

I hereby grant permission to give access to the researcher to the department to observe the actual linguistic dynamics.

Initials _____

I, the undersigned (investigator), have fully explained the investigation to the above individual.

Signed _____

Date _____

Appendix E: Summary Email for Study 1, Chapter 2 Participants

Annwyl bawb | Dear all

Diolch yn fawr iawn i chi am ein cyfarfod wythnos diwethaf – i'r rhai ohonoch oedd ddim yn gallu bod yn bresennol, dw i'n gobeithio bydd yr e-bost hwn yn crynhoi'r pethau pwysig i chi ynglŷn â'r cynllun mentora iaith fyddai'n cael ei weithredu yn adran X.

I grynhoi yn syml, nod y cynllun yw paru unigolion (mentoraï sydd eisiau defnyddio mwy o'r Gymraeg) â rhywun fyddai'n gallu cynnig cefnogaeth iddynt (mentor). Gofynnir i'r mentaï drefnu i gyfarfod â'u mentor o leiaf tair gwaith mewn tri mis, ond os yr ydych am gyfarfod yn fwy aml, grêt! Nid oes rhaid i chi gynnal cyfarfod ffurfiol gan eistedd am awr mewn ystafell â'ch gilydd, gallwch fynd i gerdded, cael paned AYB. Beth bynnag sydd yn siwtio chi! Mae amser eich cyfarfod yn bwysig hefyd – nid oes rhwystr, ond ceisiwch gyfarfod â'ch gilydd am ddigon o amser, e.e. tuag awr? i drïo gwneud cynnwys y cyfarfod yn effeithiol ar eich defnydd o'r Gymraeg wedyn yn y gwaith. Ac wrth gwrs, eich penderfyniad chi yw beth ydych am siarad. Y syniad yw defnyddio mwy o'r Gymraeg yn y gweithle, ond nid yn unig i drafod pethau AM y gwaith. Ar gyfer fy ymchwil i, byddai'n ARDDERCHOG os byddech yn gallu cadw cofnod o'ch cyfarfodydd, yn ogystal â pha mor aml rydych yn defnyddio'r Gymraeg yn eich gwaith (ym mha gyd-destun, sut, drwy ba gyfrwng, gyda phwy) – gall hyn roi data dwfn iawn ar y cynllun, a bydd yn cyfrannu'n arwyddocaol at fy noethuriaeth, felly byddaf yn gwerthfawrogi os gallwch wneud nodiadau.

Gall fod yn annodd weithiau meddwl SUT gallwch ddefnyddio'r Gymraeg yn fwy aml yn y gwaith, e.e. dros e-bost, ffôn, wyneb yn wyneb; a gyda phwy, pa mor aml, ym mha sefyllfa/cyd-destun? AYB. OS ydych yn gallu rhoi ffocws ar beth yr ydych yn ceisio ei wneud/cyflawni â defnyddio'r Gymraeg, sef targed i chi, y gobaith yw bod eich mentor yn gallu cynnig cefnogaeth. Gallwch feddwl am dasgau bach i weithio arnynt â'ch mentor ar y cychwyn, e.e., rhywbeth bach iawn fel cyfarch pawb yn y bore yn y Gymraeg, a gydag amser, gallwch osod targedau uwch.

Thanks a lot for our meeting last week – for those of you who could not be there, I hope this email will summarise the important things about the language mentoring scheme that will soon be implemented at department X.

To summarise, the aim of the scheme is to pair up individuals (mentees that wish to use more of their Welsh) with someone who can offer some support (mentor). We ask that the mentees arrange to meet with their mentor at least three times in three months, however if you would like to meet more often, great! You do not have to have a formal meeting and sit in a room together, you can go for a walk or have a cuppa, etc. Whatever suits you! The timing of your meetings is important also – there is no restriction, however try to meet for a reasonable amount, e.g. about an hour? to try to make the content of your meeting effective on your use of Welsh later at work. And of course, it is your decision what you chat about. The idea is to use more Welsh in the workplace, but not ONLY to discuss work stuff. For my research, it would be AMAZING if you could keep a record of your meetings, as well as how often you use Welsh at work (in what context, how, via what medium, with who) – this can provide rich data on the scheme, and will significantly contribute to my thesis, so I would be very grateful if you could make some notes.

It can sometimes be difficult to think HOW you could use Welsh more often at work, e.g. over email, on the phone, face to face; and who with, how often, in what situation? etc. IF you can put a focus on what you would like to do/achieve with Welsh use, which would be a target for you, the hope is that your mentor can offer support. You can think about small tasks to work on with your mentor at the beginning, e.g., little things like greet everybody in Welsh in the morning, and with time, you can set yourselves some bigger targets.

I'w wneud yn glir, nid tiwtor iaith fyddai rôl y mentor, nac i'ch cywiro mewn unrhyw sefyllfa, ond mwy fel person i'ch helpu chi gyda rhywbeth penodol, e.e., os ydych eisiau gyrru e-bost yn y Gymraeg, efallai gall y mentor helpu. OND, fel oedd wedi cael ei thrafod yn y cyfarfod, os yw'r mentor a'r mentoraï yn hapus i gywiro ac i gymryd rôl mwy fel tiwtor, mae croeso i chi wneud beth sydd yn gyffyrddus ac effeithiol ar y ddwy ochr.

Fy rôl i – yn anffodus nad oes llawer o ymchwil ledled y byd am ddefnyddio iaith leiafrifol yn y gwaith, felly, nad oes wybodaeth ar gael ynglŷn â pha ffactorau sydd yn helpu, neu'n rhwystro, defnydd o'r iaith (ieithoedd) leiafrifol. Fel trafodwyd yn y cyfarfod, y bwriad yw fy mod i am ddod mewn i'r adran/adeilad fel ymwelydd CYN i'r cynllun gael ei weithredu yn swyddogol er mwyn arsylwi beth sydd yn wirioneddol mynd ymlaen mewn termau defnydd iaith a deall y ddeinameg ieithyddol a, gobeithio, newid y ddeinameg ychydig er mwyn eich helpu chi i ddefnyddio'ch Cymraeg yn fwy aml gan ddarganfod beth sydd yn hyrwyddo hyn, a beth sydd yn ei rwystro. Bydda i'n gadael i bawb wybod ble a phryd byddaf yn bresennol, felly bydd ddim ymweliad ar hap! Byddaf hefyd yn ymweld YN YSTOD y cynllun er mwyn arsylwi sut effaith posib mae'n ei chael.

Bydda i DDIM yna i wrando ar gynnwys eich trafodaethau, DIM OND yr iaith sydd yn cael ei ddefnyddio. Bydd bwrdd moesegol yr adran Seicoleg yn cymeradwyo hyn i gyd felly peidiwch â phoeni am unrhyw beth yn ymwneud â chael eich cydnabod, a bydda i DDIM yn barnu eich defnydd nac ansawdd iaith O GWBL. Plis peidiwch â gadael i fy mhresenoldeb i amharu ar eich rwtîn gwaith naturiol/arferol, jest anwybyddwch fi a pharhewch fel arfer. Ar ôl i'r cynllun orffen, ymhen dri mis o'i gychwyn yn swyddogol, byddaf yn gobeithio cael cyfarfod gyda chi'n unigol er mwyn holi ychydig o gwestiynau a chyflawni holiaduron byr ar eich profiad o'r cynllun.

Just to clarify, the mentor is not expected to be a tutor, nor to correct you in any situation – they are more like a safe place and someone to help you with something specific, e.g., if you want to send a Welsh email, maybe they could help. HOWEVER, as was discussed in the meeting, if the mentor and the mentee are happy to correct and take a more tutor-style role, you are welcome to do what is most comfortable and effective for you both.

My role – unfortunately there has not been a lot of research across the world on using a minority language at work, so, there is a big lack of information on what factors help, or restrict, the use of a minority language(s). As we discussed in the meeting, the aim is that I will be a visitor in the department/building BEFORE the scheme is to be implemented officially so that I can observe what is actually going on in terms of language use and to understand the linguistic dynamics and, hopefully, change the dynamics little by little to help you use your Welsh more often by discovering what promotes this, and what is a barrier. I will be letting you all know where and when I will be present, so there will be no surprise visits! I will also be visiting DURING the scheme to observe any possible effects it may have.

I WILL NOT be there to listen in on the contexts of your conversations, I am ONLY interested in the language being used. The Psychology department's ethics committee will approve all of this so there is no need to worry about anything to do with identification (all will be anonymised), and I am NOT there to judge your use nor quality of language AT ALL. Please do not let my presence interfere with your regular/natural work routines, just ignore me and carry on as usual. When the scheme finishes, three months after it officially starts, I will be hoping to meet with you all individually to ask some questions and to fill in some very short questionnaires on your opinion of the scheme.

Byddaf yn gobeithio cael y gymeradwyaeth foesegol yn reit fuan fel fy mod i'n gallu cychwyn yr ymweliadau cyn gynted â phosib – unwaith byddaf wedi derbyn hyn, byddaf yn gadael i chi wybod ac yn gadael i chi wybod ble a phryd byddaf yn ymweld.

I am hoping to get the ethical approval quite soon so that I can start the observations asap – once approval has been awarded, I will let you all know – I will also let you all know when and where I will be visiting.

Hoffwn ddiolch i chi gyd o flaen llaw am ddangos eich awydd i gymryd rhan yn y prosiect cyffrous hwn – os oes gennych chi unrhyw gwestiynau o gwbl, mae croeso i chi gysylltu!

I would like to thank you beforehand for showing a keen interest in taking part in this exciting project – if you have any questions, feel free to drop us a line!

Hwyl am y tro!

Bye for now!

Cofion | Best

Arwel

Appendix F: Example of Email to Inform Study 1, Chapter 2 Participants of Observation Schedule

Hi ENW

Dyma'r syniad am yr amseroedd arsylwi
wythnos nesaf:

Here's the idea for observation times next
week:

10/10 – 9-10:30

11/10 – 2:30-4

12/10 – 2:30-4

13/10 – 9-10:30

14/10 – 2:30-4

Gobeithio bod hyn yn iawn.

I hope this is ok.

Wela' i chi 'fory!

See you tomorrow!

Cofion | Best

Arwel

Appendix G: Study 2, Chapter 2 Information Sheet

School of Psychology, Wales Centre for Behaviour Change & Canolfan

Bedwyr

Bangor University

Information Sheet

Date: _____

PLEASE KEEP THIS INFORMATION SHEET FOR YOUR RECORDS

Title of study: Language Mentoring Scheme – What Linguistic Dynamic is Present at the Department? An Observational Study and an Assessment of the Scheme’s Influence on the Use of Welsh at the Department.

Investigators:

Dr. Carl Hughes, Director of the Wales Centre for Behaviour Change

Dr. Emily Tyler, Research Officer at the Wales Centre for Behaviour Change

Dr. Lowri Hughes, Director of the Language Scheme

Dr. Elin Walker Jones, Lecturer in Applied Behavioural Analysis

Arwel Williams, Ph.D. student, School of Psychology

You have been invited to participate in a research study. Before you decide to participate, it is important for you to understand why the research is being done and what it will involve. Please take your time to read the following information carefully and, if you wish, discuss it with friends and relatives. Ask us if there is anything that is unclear

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ATHRO/PROFESSOR JOHN PARKINSON BA, PhD
PENNAETH YR YSGOL/HEAD OF SCHOOL

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www.bangor.ac.uk www.bangor.ac.uk/psychology

or if you would like more information.

We are conducting this study with department X staff members that will take part in the department's language mentoring scheme. We are particularly interested in discovering the natural linguistic dynamics within the department, i.e. which language, be it Welsh or English, gets used by who, with who, when, how frequently, and in what contexts. As you will take part in the mentoring scheme, it is essential for us to learn what linguistic dynamic is already in place before implementing the scheme, so that discovering any changes in the dynamic during and after the scheme is a possibility.

We hope to obtain permission by all individuals involved so that the researcher can have access to places in the department to observe language use. The researcher will not be present to listen in on the contexts of your conversations, nor to judge in any way your use or quality of language – only the linguistic dynamic will be recorded. The researcher will not interfere with your work by talking or by deliberately catching your attention – carry on with your natural routines and try to ignore the researchers' presence. The researcher will send an email to the department director at least two days in advance to state where and when the observations will be conducted. The director will then circulate the information via email banner to all the staff to make everyone aware of the schedule. Additionally, the director will circulate an email on a fortnightly basis to all participants to confirm that the observations can continue. Any issues that arise in response to these emails will result in the observations being suspended. Following this,

you, the director and the researcher will have the opportunity to discuss further and see if an agreement can be reached to continue with observations. If an agreement cannot be reached, the observations will be terminated.

All records of language use will be treated with the strictest confidentiality: only the researchers will have access to this data. Notes by the researcher will be kept in digital form and all data will be treated with strict confidentiality. The data that will be collected during this methodology will be very valuable to include in the researcher's Ph.D. thesis, as well as to the development of services such as mentoring schemes, promoting the use of the Welsh language and discovering the actual linguistic dynamics within bilingual workplaces, rather than language status only.

If you do decide to grant permission you will be given a copy of this information sheet to keep and will be asked to sign a consent form. You will be free to withdraw at any time without penalty, and without giving a specific reason. If the study should have any negative or distressing effects on you, it will be suspended. Following this, you, the director and the researcher will have the opportunity to discuss further and see if an agreement can be reached to continue with observations. If an agreement cannot be reached, the observations will be terminated.

This study has been reviewed by the Research Ethics Committee, Bangor University, and there is absolutely no risk of harm to you. However, in the event of any complaints arising concerning this research, please address them to Mr. Hefin Francis, School Manager, School of Psychology, Brigantia Building, Penrallt Road, Bangor, Gwynedd, LL57 2AS. **Ethics application number:**

If you have any further questions regarding this study, please feel free to contact Dr. Carl Hughes, School of Psychology, Brigantia Building, Penrallt Road, Bangor, Gwynedd, LL57 2AS.

Thank you very much for your interest.

Best,

Arwel Williams, Ph.D. student, School of Psychology.

Appendix H: Study 2, Chapter 2 Consent Form

School of Psychology, Wales Centre for Behaviour Change & Canolfan

Bedwyr

Bangor University

Consent Form

Date: _____

**PLEASE KEEP A SIGNED COPY OF THIS CONSENT FORM FOR
YOUR RECORDS**

Title of study: Language Mentoring Scheme – What Linguistic Dynamic is Present at the Department? An Observational Study and an Assessment of the Scheme’s Influence on the Use of Welsh at the Department.

Ethics application number:

I hereby consent to take part as a volunteer in the aforementioned study and confirm that I have read and understood the information sheet. The investigation has been fully explained to me by the investigator and I fully understand their explanations – my questions and/or concerns have been answered.

Initials _____

I understand that I can withdraw my consent at any time without any penalty and without providing a specific reason. I may also request for any data collected to be removed from the study and destroyed.

Initials _____

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EMAIL: psychology@bangor.ac.uk

www.bangor.ac.uk www.bangor.ac.uk/psychology

Registered charity number: 1141565

I understand that any data gathered from this study will be anonymised, and that it can and will be analysed and used in published work and as part of the investigator's Ph.D. thesis in a completely confidential manner with regard to my identity.

Initials _____

I hereby grant permission to give access to the researcher to the department to observe the actual linguistic dynamics.

Initials _____

I, the undersigned (investigator), have fully explained the investigation to the above individual.

Signed _____

Date _____

Appendix I: Welsh Language Mentoring Scheme Guidance Booklet

2015

Cynllun Mentora laith

The Language Mentoring Scheme



PRIFYSGOL
BANGOR
UNIVERSITY



1. Beth yw Mentora?

Mae mentora yn ffordd bwerus iawn o ddatblygu unigolyn ac yn rhoi hyder iddynt ddatblygu eu sgiliau eu hunain. Mae'n cael ei ddisgrifio fel perthynas rhwng person profiadol (y mentor) ac unigolyn (y mentai) lle bo'r mentor yn cefnogi'r mentai i ddatblygu sgil benodol neu wybodaeth fydd yn arwain at ddatblygiad personol a thyfiant.

Tywyswr yw'r mentor sy'n cynorthwyo'r mentai i ganfod y trywydd iawn ac yn rhoi arweiniad yn aml ar faterion datblygu sgil neu yrfa. Mae angen i'r mentor gael diddordeb ac empathi gydag anghenion datblygol y mentai yn ogystal â dealltwriaeth o'r heriau yn eu hwynebu.

Mae'r Mentor angen ...

GWRANDO	Ceisio deall Dangos gwerth a gofal drwy dalu sylw
DANGOS EMPATHI	Dilysu anhawsterau a theimladau Rhannu profiad
HERIO	Drwy gwestiynnu – ond mae angen bod ar y lefel iawn ac nid rhy heriol Drwy helpu'r mentai adnabod cyfleoedd ac efallai 'manau dall' sy'n bodoli
ANNOG	Drwy adlewyrchu eu cryfderau yn ol iddynt Drwy ddangos eich bod chi'n credu yn eu gallu
CREU FFOCWS	Eu cynorthwyo i flaenoriaethu, gosod nodau am eu dysgu Cynorthwyo i greu agenda'r sesiynnau mentora
AGOR FYNY	Cynorthwyo'r mentai drwy agor fyny ffyrdd newydd o feddwl Creu cyfle i feddwl am berthnasau a rhwydweithiau newydd
CAU LAWR	Eu cynorthwyo i wneud penderfyniadau Helpu i ddatrys problemau

Bod yn.....

DDIBYNADWY	Y gallu i ymddiried ynddoch chi..... Bod yn berson saff i siarad hefo hwy Cadw at drefniadau
DDILYS	Bod yn onest am eich meddyliau a'ch teimladau
CHWILFRYDIG	Bod yn agored i be all y problemau a datrysiadau fod

2. Canllawiau i'r Mentor

Mae'n bwysig iawn i ddysgwyr drïo defnyddio'r Gymraeg gymaint â phosib y tu allan i'r gwersi Cymraeg. Trwy siarad efo chi yn anffurfiol yn y gwaith, bydd hyn yn helpu i godi hyder y dysgwr i ddefnyddio mwy o Gymraeg bob dydd efo siaradwyr Cymraeg eraill.

Dyma ychydig o ganllawiau, ond mae croeso i chi wneud beth bynnag sy'n gyfleus a naturiol i chi:

Ceisiwch siarad Cymraeg bob amser gyda'r dysgwr, a chytuno ar sut y byddwch yn gwneud hyn. Hynny yw, drwy siarad Cymraeg yn anffurfiol bob tro y byddwch yn cyfarfod ond hefyd trwy drefnu sesiwn benodol bob mis er mwyn cael llonydd i ganolbwyntio ar y sgwrs.

- Trefnwch gyfarfod unwaith bob mis a'i roi yn eich calendr fel digwyddiad rheolaidd. Os oes angen i chi ganslo sesiwn, trefnwch amser arall yr un mis
- Cadwch y sgwrs yn syml ac yn anffurfiol. Defnyddiwch y Gymraeg dach chi'n ei siarad bob dydd
- Rhowch ganmoliaeth o dro i dro - bydd hyn yn helpu'r dysgwr i fagu hyder
- Peidiwch â chywiro'r dysgwr neu orffen brawddegau - gadewch amser iddo/iddi feddwl
- Os nad yw'r dysgwr yn deall, rhowch yr ymadrodd eto yn y Gymraeg mewn ffordd fwy syml neu'n arafach.

Cwestiynau Mentora Pwerau

Mae'r isod yn esiamplau o gwestiynau mentora cyffredinol all gael eu haddasu ar gyfer mentora iaith. Cofiwch gadw cofnod o gwestiynau da chi'n defnyddio sy'n gweithio'n dda, enyn ymateb a sgwrs. Gallwn eu rhannu yn y sesiwn dilyniant fis Rhagfyr.

Oes rhywbeth penodol hoffech chi ganolbwyntio arno/ drafod heddiw...?

Beth sydd wedi eich rhwystro chi yn y gorffennol...?

Beth fyddai'n digwydd petai chi'n trio...?

Rydych i weld yn ansicr o/ yn ddihyder am/ yn hyderus am hynny...?

Byddai ... yn help i chi?

Da chi di meddwl am...?

Da chi'n gneud yn dda iawn hyd yma. Oes 'na rywun arall all eich cynorthwyo o ddydd i ddydd?

Sut ewch chi o gwmpas trafod â nhw?

Ym mha ffordd wnaiff hyn helpu?

Be arall fyddai'n ddefnyddiol i ni drafod?

Sut alla i'ch helpu chi?

3. Canllawiau Sylfaenol i rai sy'n Cael eu Mentora

Cofiwch fod eich mentor yn rhoi o'i hamser, ei hyder a'i phrofiad i chi. Dylech barchu hyn a pharatoi'n drylwyr cyn i chi gysylltu neu gwrdd (hyd yn oed os yw'n golygu bod eich cyfarfodydd yn anffurfiol).

Cyn eich cyfarfod cyntaf gyda'ch mentor, dylech ofyn y cwestiynau canlynol i chi eich hun. Bydd hyn o gymorth ichi ganfod meysydd i'w gwella a bydd yn caniatáu ichi gael trafodaethau mwy penodol a chynhyrchiol.

- Beth ydw i wedi'i gyflawni hyd yn hyn wrth ddysgu Cymraeg?
- Beth fyddwn i'n hoffi ei drafod gyda fy mentor a beth yw fy mhrif amcan(ion)?
- Ble ydw i o safbwynt y daith tuag at fod yn hyderus yn Y Gymraeg?
- Beth ydw i angen ei wneud, yn fy marn i, i gyflawni fy amcanion?
- Beth yw fy nisgwyliadau o fentor a beth gall fy mentor ei wneud i fy helpu i?

Cofiwch ofyn y cwestiynau hyn i'ch mentor, a chytuno ar yr atebion:

- Sut byddem yn cynnal ein cyfarfodydd?
- Pa mor aml ac ymhle fyddwn ni yn cwrdd?
- Beth fydd hyd bob cyfarfod?
- Beth fyddwn ni yn ei wneud os oes angen canslo neu aildrefnu cyfarfod?
- Pa ddull cyfathrebu allwn ni ei ddefnyddio rhwng cyfarfodydd?

Ar gyfer cyfarfodydd neu gyswllt dilynol, bydd angen ichi adolygu eich cynnydd yn barhaus. Gallech ofyn y cwestiynau canlynol i chi'ch hun:

- Beth ydw i wedi'i wneud/cyflawni neu beth fydden i'n hoffi ei gyflawni?
- Ydw i wedi cyflawni'r hyn yr oeddwn yn bwriadu ei gyflawni?
- Beth ydw i wedi'i ddysgu?
- Beth aeth yn dda?
- Beth allwn i fod wedi'i wella?

Dylech hefyd ystyried y cyngor canlynol er mwyn manteisio i'r eithaf ar eich perthynas fentora:

- Penderfynwch beth yr hoffech ei gyflawni yn eich cyfarfod nesaf - dylech chi arwain yr agenda.
- Cofiwch mai chi ddylai fod yn gwneud y rhan fwyaf o'r siarad - o leiaf 70% ohono.
- Ceisiwch gyrraedd eich sesiynau ar amser.
- Os cewch unrhyw anawsterau gyda'ch perthynas fentora, trafodwch gyda'ch mentor ac egluro sut yr hoffech i'r pethau hyn newid. Byddwch yn glir ynghylch eich disgwyliadau a rhowch adborth i'ch mentor ar y broses o'ch safbwynt chi.

Os ydych wedi rhoi ystyriaeth ofalus i'r canllawiau uchod, dylai'r profiad mentora fod yn hynod o werthfawr a llesol i'ch datblygiad personol a phroffesiynol yn y dyfodol.

3. Basic Guidelines for Mentees

Remember your mentor is giving you their time, confidence and experience. Respect this and prepare thoroughly before you make contact or meet (even if they are informal meetings).

Before your first meeting with your mentor ask yourself the following questions. This will help you identify areas for improvement and allow you to have more focussed and productive discussions

- What have I achieved so far whilst learning Welsh?
- What would I like to discuss with my mentor and what are my main objective(s)?
- Where am I on the path to achieving fluency in Welsh?
- What do I think I need to do to achieve my goals?
- What are my expectations of a mentor and what can my mentor do to help me?

Remember to ask and agree with your mentor:

- How we will conduct our meetings?
- How often and where will we meet?
- How much time will we spend on each meeting?
- What do we do if a meeting has to be cancelled or rescheduled?
- What method of communication in between meetings may we use?

For subsequent meetings or contact, you will need to review your progress on an ongoing basis. You could ask yourself the following questions:

- What have I done/achieved or what would I like to achieve?
- Have I achieved what I planned to?
- What have I learnt?
- What went well?
- What could have been improved on?

The following advice should also be considered in order to get the most out of you mentoring relationship:

- Decide what you want to get out of your next meeting – the agenda should be led by you.
- Remember you should be doing most of the talking – at least 70% of it.
- Try to be on time for meetings.
- Should you experience any difficulties with your mentoring relationship discuss with your Mentor and identify how you would like these things to change. Be clear about your expectations and give feedback to your mentor on the process from your point of view.

If you have given careful thought and consideration to the above guidelines you should find the mentoring experience extremely rewarding and beneficial for your future personal and professional development.

4. Sgwrs hefo'r Mentor - Canllawiau penodol i Ddysgwyr

Os yn bosib, mi ddylech chi:

- Trio defnyddio Cymraeg efo'ch mentor bob amser, a chytuno sut dach chi'n mynd i neud hynny e.e:
 - trefnu sgwrs un i un wythnosol
 - siarad Cymraeg yn anffurfiol bob tro dach chi'n cyfarfod
 - trafod gwaith yn y Gymraeg ond defnyddio termau Saesneg weithiau os bydd angen
- Trefnu cael sgwrs yr run amser bob wythnos os yn bosib, a rhoi'r amser yn eich calendr fel digwyddiad sy'n parhau. Os oes rhaid i chi ganslo sesiwn, triwch drefnu amser arall yr un wythnos
- Peidio â gofyn cwestiynau am eirfa neu ramadeg - cadwch y rhain i'ch tiwtor!
- Os dach chi ddim yn deall rhywbeth, gofynnwch i'ch mentor ei ddweud o eto yn arafach
- Os dach chi ddim yn siŵr sut i ddweud gair, defnyddiwch y gair Saesneg a pharhau efo'r sgwrs yn Gymraeg wedyn

If possible you should:

- Try always to use Welsh with your mentor and agree how you will do this e.g:
 - arrange a weekly one to one chat
 - speak Welsh informally every time you meet
 - discuss work in Welsh but use English terms sometimes if necessary
- Aim to meet at a regular time each week and put in your calendar as an ongoing commitment. If you have to cancel a meeting try to rearrange for another time that week.
- Avoid asking questions about grammar or vocabulary – save these for your tutor!
- If you don't understand something, ask your mentor to repeat it more slowly
- If you are not sure how to say a word then just include the English word and carry on in Welsh – try to keep the conversation flowing

Appendix J: Email Invite for Study 3, Chapter 3 Participants from Department A

Annwyl X,

Fy enw i yw Arwel, a dw i'n fyfyrwr PhD yn yr adran Seicoleg yma ym Mhrifysgol Bangor a dw i'n ymddiddori mewn defnyddio dulliau newid ymddygiad i gynyddu defnydd y Gymraeg yn y Gweithle.

Dw i'n siŵr eich bod chi wedi cael e-bost gan X yn ogystal ag eraill yn y Brifysgol am yr hyn rwyf i'n gobeithio ei wneud gyda chi, sef cyfranogwr yng nghynllun mentora'r Gymraeg. Fy ngobaith yw cael trefnu cyfarfod gyda chi er mwyn cynnal holiaduron byr a holi ychydig o gwestiynau ar lafar er mwyn cael eich adborth ynglŷn â'ch profiadau a'ch barn bersonol am y cynllun. Bydd hyn yn rhoi data grêt i fy ngwaith i er mwyn cael symud ymlaen â chynllun arall yn y dyfodol, a gyda'ch adborth chi, ei weithredu yn well.

Tybed allwn ni wneud trefniadau i gyfarfod er mwyn trafod y cwestiynau? Os oes gennych ryw awr yn rhydd wythnos nesaf, neu wythnos wedyn, buaswn yn hynod o ddiolchgar os gallwn gyfarfod mewn ystafell yn yr adran i edrych ar y cwestiynau. Bydd rhaid i ni allu siarad ar lafar er mwyn cyflawni'r fethodoleg, felly bydd ystafell breifat yn grêt.

Edrychaf ymlaen at eich ymateb a hoffwn ddiolch i chi o flaen llaw am eich cydweithrediad ac am eich cyfraniad tuag at y cynllun cyffrous hwn.

Cofion,
Best,

Arwel

My name is Arwel, and I am a PhD student in the Psychology department here at Bangor University and I am interested in using behaviour-change techniques to increase the use of Welsh in the Workplace.

I am sure that you have received an email by X as well as others from the University regarding what I am hoping to fulfil with you, a participant in the Welsh language mentoring scheme. My hope is to arrange a meeting with you to run through short questionnaires and some verbal questions to get feedback of your experiences and personal opinion of the scheme – this would give me some great data to move on with implementing a new scheme in the future and, with your feedback, strengthen it.

Perhaps we could make arrangements to meet and go through the questions? If you have a spare hour-ish next week or the week after, I would be very grateful if we could meet in one of the rooms in the department to run through the questions. We would need to be able to speak verbally to complete the methodology, so a private room would be great.

I look forward to your response and I would like to thank you in advance for your cooperation and contribution towards this exciting scheme.

Appendix K: Email Invite for Study 3, Chapter 3 Participants from Department B

Annwyl X,

Fel dw i'n siŵr yr ydych yn ymwybodol, roeddwn i wedi bod yn arsylwi'r ddeinameg ieithyddol yn yr adran rhwng mis Awst a Thachwedd. Mae'r arsylwi wedi dod i ben erbyn hyn, a rŵan mae'n amser imi drïo symud ymlaen at gam nesaf fy mhrosiect.

Fy ngobaith yw cael trefnu cyfarfod gyda chi er mwyn cynnal holiadur a holi ychydig o gwestiynau ar lafar er mwyn cael eich adborth ynglŷn â'ch profiadau a'ch barn bersonol am y cynllun a'ch arferion ieithyddol. Bydd hyn yn rhoi data grêt i fy ngwaith i er mwyn cael symud ymlaen â chynllun arall yn y dyfodol, a gyda'ch adborth chi, ei weithredu yn well. Yn ogystal i hyn, bydd clywed eich barnau chi am yr arferion ieithyddol yn rhoi data dwfn imi ar yr ymddygiad gwirioneddol o fewn yr adran.

Tybed allwn ni wneud trefniadau i gyfarfod er mwyn trafod y cwestiynau? Os oes gennych ryw awr i ryw awr a hanner yn rhydd wythnos nesaf, neu wythnos wedyn, neu amser sydd yn gyfleus ichi, buaswn yn hynod o ddiolchgar os gallwn gyfarfod. Bydd rhaid inni allu siarad ar lafar, felly bydd ystafell breifat yn ofynnol.

Edrychaf ymlaen at eich ymateb a hoffwn ddiolch i chi o flaen llaw am eich cydweithrediad ac am eich cyfraniad tuag at y cynllun cyffrous hwn.

Cofion,
Best,

Arwel

As I am sure you are aware, I have been observing the linguistic dynamic at the department between August and November. By now, these observation sessions have come to an end, and it is now time for me to try to move on to the next stage of my project.

I am hoping is to arrange a meeting with you to run through a questionnaire and some verbal questions to get feedback of your experiences and personal opinion of the scheme and your linguistic habits. This would give me some great data to move on with implementing a new scheme in the future and, with your feedback, strengthen it. In addition, hearing your opinions on the linguistic practices would give me some very rich data on the actual behaviour at the department.

Perhaps we could make arrangements to meet and go through the questions? If you have a spare hour / hour-and-a-half-ish next week or the week after, or at a convenient time to you, I would be very grateful if we could meet. We would need to be able to speak verbally so a private room would be required.

I look forward to your response and I would like to thank you in advance for your cooperation and contribution towards this exciting scheme.

Appendix L: Study 3, Chapter 3 Information Sheet for Mentors from Department A

School of Psychology, Wales Centre for Behaviour Change & Canolfan

Bedwyr

Bangor University

Information Sheet

Date: _____

PLEASE KEEP THIS INFORMATION SHEET FOR YOUR RECORDS

Title of study: Language Mentoring Scheme – how did it go? Feedback from the participants.

Investigators:

Dr. Carl Hughes, Director of the Wales Centre for Behaviour Change

Dr. Emily Tyler, Research Officer at the Wales Centre for Behaviour Change

Dr. Lowri Hughes, Director of the Language Scheme

Dr. Elin Walker Jones, Lecturer in Applied Behavioural Analysis

Arwel Williams, Ph.D. student, School of Psychology

You have been invited to participate in a research study. Before you decide to participate, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and, if you wish, discuss it with friends and relatives. Ask us if there is anything that is unclear or if you would like more information.

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TEL: (01248) 382211

Registered charity number: 1141565

ATHRO/PROFESSOR JOHN PARKINSON BA, PhD
PENNAETH YR YSGOL/HEAD OF SCHOOL

EBOST: seicoleg@bangor.ac.uk
EMAIL: psychology@bangor.ac.uk

www.bangor.ac.uk www.bangor.ac.uk/psychology

We are conducting this follow-up study on those who participated in the language mentoring scheme. We are particularly interested to get the honest opinions of those involved regarding the scheme itself, their experience in mentoring Welsh and attitude towards the Welsh language. Additionally, we are interested in your honest opinions regarding how the scheme can be improved during the next step of the scheme so that it suits you better, and so that changes and improvements can be made to implement a better scheme at other departments around Bangor University. You have been directly contacted and invited to participate because you were directly involved with the scheme between September of last year (2015) up until the Christmas break.

We hope to gather your opinions through standard written questionnaires and interview-style questions. You will be given some questions in the form of Likert scale questionnaires to rank how strongly you agree with a statement. In addition to this, the investigator will verbally ask you open questions regarding the scheme where you will be expected to be as honest and as detailed as possible – this interview will be recorded in audio format so that nothing will be missed when note-taking during your responses. You are free to consent to allow the recording to take place, as well as refuse the recording to take place.

All of your answers will be treated with the strictest confidentiality: only the researchers will have access to your responses. Your written responses to the questionnaires will be transferred onto digital versions to remove your handwriting, and the verbal responses will be transcribed to remove your voice. Upon creating anonymous digital versions of your questionnaire responses, your physical handwritten responses will be destroyed in a confidential manner. Upon transcribing your verbal responses, the audio recording will be permanently deleted. The data that will be collected during this methodology will be very valuable to include in the researchers Ph.D. thesis, as well as to the development of services such as mentoring schemes and the promotion of the Welsh language.

If you do decide to take part you will be given a copy of this information sheet to keep and will be asked to sign a consent form. You will be free to withdraw at any time without penalty, and without giving a specific reason.

This study has been reviewed by the Research Ethics Committee, Bangor University, and there is absolutely no risk of harm to you. However, in the event of any complaints arising concerning this research, please address them to Mr. Hefin Francis, School Manager, School of Psychology, Brigantia Building, Penrallt Road, Bangor, Gwynedd, LL57 2AS.

Ethics application number:

If you have any further questions regarding this study, please feel free to contact Dr. Carl Hughes, School of Psychology, Brigantia Building, Penrallt Road, Bangor, Gwynedd, LL57 2AS.

COLEG GWYDDORAU IECHYD AC YMDDYGIAD
COLLEGE OF HEALTH & BEHAVIOURAL SCIENCES

YSGOL SEICOLEG
SCHOOL OF PSYCHOLOGY



Thank you very much for your interest.

Best,

Arwel Williams, Ph.D. student, School of Psychology.

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Appendix M: Study 3, Chapter 3 Information Sheet for Mentees from Department A

School of Psychology, Wales Centre for Behaviour Change & Canolfan

Bedwyr

Bangor University

Information Sheet

Date: _____

PLEASE KEEP THIS INFORMATION SHEET FOR YOUR RECORDS

Title of study: Language Mentoring Scheme – how did it go? Feedback from the participants.

Investigators:

Dr. Carl Hughes, Director of the Wales Centre for Behaviour Change

Dr. Emily Tyler, Research Officer at the Wales Centre for Behaviour Change

Dr. Lowri Hughes, Director of the Language Scheme

Dr. Elin Walker Jones, Lecturer in Applied Behavioural Analysis

Arwel Williams, Ph.D. student, School of Psychology

You have been invited to participate in a research study. Before you decide to participate, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and, if you wish, discuss it with friends and relatives. Ask us if there is anything that is unclear or if you would like more information.

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EMAIL: psychology@bangor.ac.uk

www.bangor.ac.uk www.bangor.ac.uk/psychology

We are conducting this follow-up study on those who participated in the language mentoring scheme. We are particularly interested to get the honest opinions of those involved regarding the scheme itself, their experience in learning Welsh and attitude towards learning. Additionally, we are interested in your honest opinions regarding how the scheme can be improved during the next step of the scheme so that it suits you better, and so that changes and improvements can be made to implement a better scheme at other departments around Bangor University. You have been directly contacted and invited to participate because you were directly involved with the scheme between September of last year (2015) up until the Christmas break.

We hope to gather your opinions through standard written questionnaires and interview-style questions. You will be given some questions in the form of Likert scale questionnaires to rank how strongly you agree with a statement. In addition to this, the investigator will verbally ask you open questions regarding the scheme where you will be expected to be as honest and as detailed as possible – this interview will be recorded in audio format so that nothing will be missed when note-taking during your responses. You are free to consent to allow the recording to take place, as well as refuse the recording to take place.

All of your answers will be treated with the strictest confidentiality: only the researchers will have access to your responses. Your written responses to the questionnaires will be transferred onto digital versions to remove your handwriting, and the verbal responses will be transcribed to remove your voice. Upon creating anonymous digital versions of your questionnaire responses, your physical handwritten responses will be destroyed in a confidential manner. Upon transcribing your verbal responses, the audio recording will be permanently deleted. The data that will be collected during this methodology will be very valuable to include in the researchers Ph.D. thesis, as well as to the development of services such as mentoring schemes and the promotion of the Welsh language.

If you do decide to take part you will be given a copy of this information sheet to keep and will be asked to sign a consent form. You will be free to withdraw at any time without penalty, and without giving a specific reason.

This study has been reviewed by the Research Ethics Committee, Bangor University, and there is absolutely no risk of harm to you. However, in the event of any complaints arising concerning this research, please address them to Mr. Hefin Francis, School Manager, School of Psychology, Brigantia Building, Penrallt Road, Bangor, Gwynedd, LL57 2AS.

Ethics application number:

If you have any further questions regarding this study, please feel free to contact Dr. Carl Hughes, School of Psychology, Brigantia Building, Penrallt Road, Bangor, Gwynedd, LL57 2AS.

COLEG GWYDDORAU IECHYD AC YMDDYGIAD
COLLEGE OF HEALTH & BEHAVIOURAL SCIENCES

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Thank you very much for your interest.

Best,

Arwel Williams, Ph.D. student, School of Psychology.

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Appendix N: Study 3, Chapter 3 Consent Form for Respondents from Department A

School of Psychology, Wales Centre for Behaviour Change & Canolfan

Bedwyr

Bangor University

Consent Form

Date: _____

**PLEASE KEEP A SIGNED COPY OF THIS CONSENT FORM FOR
YOUR RECORDS**

Title of study: Language Mentoring Scheme – how did it go? Feedback from the participants.

Ethics application number:

I hereby consent to take part as a volunteer in the aforementioned study and confirm that I have read and understood the information sheet. The investigation and my part in the investigation have been fully explained to me by the investigator and I fully understand their explanations – my questions and/or concerns have been answered.

Initials _____

I understand that I am free not to answer any specific questions for any reason without penalty. I also understand that I can withdraw my consent at any time without any penalty and without providing a specific reason.

Initials _____

I understand that any data gathered from this study will be anonymised, and that it can and will be analysed and used in published work and as part of the investigator's Ph.D. thesis in a completely confidential manner with regard to my identity.

Initials _____

I hereby consent to allow my verbal responses to the interview part of this methodology to be recorded and listened back to by the investigator before being destroyed.

Initials _____

I, the undersigned (investigator), have fully explained the investigation to the above individual.

Signed _____

Date _____

Appendix O: Study 3, Chapter 3 Interview Schedule for Mentees from Department A

1. What did you enjoy during the scheme?
2. What did you not enjoy during the scheme?
3. What was missing in your opinion?
 - What would you add to the scheme to make it more effective?
4. What had you hoped to achieve by participating in the scheme?
 - Did you reach these achievements?
5. Do you challenge yourself in Welsh?
 - How often?
 - With?
 - In what situation(s)?
 - What sort of experience is this?
6. Are you currently in the process of changing your verbal and written correspondence language from English to Welsh with any of your co-workers?
 - What sort of experience is this?
 - How do the other people feel and/or respond to this change?
 - With how many of your co-workers are you trying this language shift?
7. Have you already gone through the process of changing your verbal and written correspondence language from English to Welsh with any of your co-workers?
 - What sort of experience is this?
 - How do the other people feel and/or respond to this change?
 - With how many of your co-workers have you completed this language shift?
8. Do you consider yourself to be fluent enough to have an informal chat with any of your first-language Welsh co-workers?
9. Do you feel that you use your Welsh outside of the workplace also?
 - How often?
 - With?
 - In what situation(s)?
 - What sort of experience is this?

10. Have you noticed anything specific about the way people use Welsh?
 - Verbally...
 - Signs...
 - Correspondences...
 - Does anything stand out for you?
 - Do you think anything is missing, or would you like to see anything being changed or added to your environment? How would you implement this?
11. As part of the University's Strategy to Promote the Use of Welsh, it is possible for a member of staff to spend some time doing their work at Canolfan Bedwyr to experience a Welsh working environment.
 - Would you be interested in doing this?
12. Would you like to make arrangements to continue meeting up with your mentor at a time that suits you both?
 - What would you like to do?
 - Where would you like to go?
 - When? During working hours? Tea/coffee break? Lunchtime? Before/after work? Over the weekend?
 - How often?
 - Over the phone/text messaging/email as well as face to face?

Appendix P: Study 3, Chapter 3 Interview Schedule for Mentors from Department A

1. What did you enjoy during the scheme?
2. What did you not enjoy during the scheme?
3. What was missing in your opinion?
 - What would you add to the scheme to make it more effective (for mentors and mentees)?
4. What had you hoped to achieve by participating in the scheme?
 - Did you reach these achievements?
5. Do you challenge your Welsh-learning co-workers in Welsh?
 - How often?
 - In what situation(s)?
 - What sort of experience is this?
6. Are you currently in the process of changing your verbal and written correspondence language from English to Welsh with any of your co-workers?
 - With learners or fluent speakers?
 - What sort of experience is this?
 - How do the other people feel and/or respond to this change?
 - With how many of your co-workers are you trying this language shift?
7. Have you already gone through the process of changing your verbal and written correspondence language from English to Welsh with any of your co-workers?
 - With learners or fluent speakers?
 - What sort of experience is this?
 - How do the other people feel and/or respond to this change?
 - With how many of your co-workers have you completed this language shift?
8. Do you feel that you use your Welsh outside of the workplace also?
 - How often?
 - With?
 - In what situation(s)?
 - What sort of experience is this?

9. Have you noticed anything specific about the way people use Welsh?
 - Verbally...
 - Signs...
 - Correspondences...
 - Does anything stand out for you?
 - Do you think anything is missing, or would you like to see anything being changed or added to your environment? How would you implement this?
10. As part of the University's Strategy to Promote the Use of Welsh, it is possible for a member of staff to spend some time doing their work at Canolfan Bedwyr to experience a Welsh working environment.
 - Would you be interested in doing this?
11. Would you like to make arrangements to continue meeting up with your mentee at a time that suits you both?
 - What would you like to do?
 - Where would you like to go?
 - When? During working hours? Tea/coffee break? Lunchtime? Before/after work? Over the weekend?
 - How often?
 - Over the phone/text messaging/email as well as face to face?

Appendix Q: Study 3, Chapter 3 Information Sheet for Respondents from Department

B

School of Psychology, Wales Centre for Behaviour Change & Canolfan

Bedwyr

Bangor University

Information Sheet

Date: _____

PLEASE KEEP THIS INFORMATION SHEET FOR YOUR RECORDS

Title of study: Language Mentoring Scheme – how did it go? Questionnaire and semi-structured interview with the participants.

Investigators:

Dr. Carl Hughes, Director of the Wales Centre for Behaviour Change

Dr. Emily Tyler, Research Officer at the Wales Centre for Behaviour Change

Dr. Lowri Hughes, Director of the Language Scheme

Dr. Elin Walker Jones, Lecturer in Applied Behavioural Analysis

Arwel Williams, Ph.D. student, School of Psychology

You have been invited to participate in a research study. Before you decide to participate, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and, if you wish, discuss it with friends and relatives. Ask us if there is anything that is unclear or if you would like more information.

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ATHRO/PROFESSOR JOHN PARKINSON BA, PhD
PENNAETH YR YSGOL/HEAD OF SCHOOL

EBOST: seicoleg@bangor.ac.uk
EMAIL: psychology@bangor.ac.uk

www.bangor.ac.uk www.bangor.ac.uk/psychology

We are conducting this follow-up study on those who participated in the language mentoring scheme. We are particularly interested to get the honest opinions of those involved in the scheme itself, their experience with the Welsh language, their attitudes towards the language, and their linguistic habits in the workplace, i.e. what language, be it Welsh, English or others, gets used with who, when, how frequently, in what contexts and why/what influences on language use. Additionally, we are interested in your honest opinions on how the scheme can be improved so that changes and improvements can be made when it is implemented in future. You have been directly contacted and invited to participate because you participated in the scheme from the end of May until the end of the year.

We hope to gather your opinions through standard written questionnaires and verbal questions in the form of a semi-structured interview. You will be given some questions in the form of Likert scale questionnaires to rank how strongly you agree with a statement. In addition to this, the investigator will verbally ask you some questions where you will be expected to be as honest and as detailed as possible. The interview will be recorded in audio format so that nothing will be missed when note-taking during your responses. You are free to consent to allow the recording to take place, as well as refuse the recording to take place.

All of your answers will be treated with the strictest confidentiality: only the researchers will have access to your responses. Your written responses to the questionnaires will be transferred onto digital versions to remove your handwriting, and the verbal responses will be transcribed to remove your voice. Upon creating anonymous digital versions of your questionnaire responses, your physical handwritten responses will be destroyed in a confidential manner. Upon transcribing your verbal responses, the audio recording will be permanently destroyed. The data that will be collected during this methodology will be very valuable to include in the researchers Ph.D. thesis, as well as to the development of services such as mentoring schemes and the promotion of the Welsh language.

If you do decide to take part you will be given a copy of this information sheet to keep and will be asked to sign a consent form. You will be free to withdraw at any time without penalty, and without giving a specific reason.

This study has been reviewed by the Research Ethics Committee, Bangor University, and there is absolutely no risk of harm to you. However, in the event of any complaints arising concerning this research, please address them to Mr. Hefin Francis, School Manager, School of Psychology, Brigantia Building, Penrallt Road, Bangor, Gwynedd, LL57 2AS.

If you have any further questions regarding this study, please feel free to contact Dr. Carl Hughes, School of Psychology, Brigantia Building, Penrallt Road, Bangor, Gwynedd, LL57 2AS. **Ethics application number:**

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COLEG GWYDDORAU IECHYD AC YMDDYGIAD
COLLEGE OF HEALTH & BEHAVIOURAL SCIENCES

YSGOL SEICOLEG
SCHOOL OF PSYCHOLOGY



Thank you very much for your interest.

Best,

Arwel Williams, Ph.D. student, School of Psychology.

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Appendix R: Study 3, Chapter 3 Consent Form for Respondents from Department B

School of Psychology, Wales Centre for Behaviour Change & Canolfan

Bedwyr

Bangor University

Consent Form

Date: _____

**PLEASE KEEP A SIGNED COPY OF THIS CONSENT FORM FOR
YOUR RECORDS**

Title of study: Language Mentoring Scheme – how did it go? Questionnaire
and semi-structured interview with the participants.

Ethics application number:

I hereby consent to take part as a volunteer in the aforementioned study and confirm that I have read and understood the information sheet. The investigation and my part in the investigation have been fully explained to me by the investigator and I fully understand their explanations – my questions and/or concerns have been answered.

Initials _____

I understand that I am free not to answer any specific questions for any reason without penalty. I also understand that I can withdraw my consent at any time without any penalty and without providing a specific reason.

Initials _____

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I understand that any data gathered from this study will be anonymised, and that it can and will be analysed and used in published work and as part of the investigator's Ph.D. thesis in a completely confidential manner with regard to my identity.

Initials _____

I hereby consent to allow my verbal responses to the interview part of this methodology to be recorded and listened back to by the investigator before being destroyed.

Initials _____

I, the undersigned (investigator), have fully explained the investigation to the above individual.

Signed _____

Date _____

Appendix S: Study 3, Chapter 3 Interview Schedule for Respondents from Department

B

PHASE 1**Framing:**

_____ Before we start, I'd just like to tell you a little bit about myself and my research. I'm from Caernarfon, born and bred – my education, family life, social life, pretty much everything was in Welsh, even walking through the high street, I was immersed in Welsh by sound and mainly English by sight. That's just the way it is in Caernarfon. Even jobs I had as a teenager – I spoke mainly Welsh with my co-workers, and mixed Welsh and English with customers, although I would say Welsh did dominate, just about, since my jobs were in Caernarfon and Bontnewydd. Before I started my PhD, I did my undergraduate here, then I took a year off to work to *then* be able to come back here to do my masters, and it was during my masters that I stumbled into the world of behaviour-change psychology and, along with my masters project, mashed it with language behaviour.

_____ For my PhD, I'm interested in the bilingual workplace, and what the dynamic of a bilingual workplace such as this one *actually is*, in terms of linguistic behaviour, patterns, habits, norms, influences and so on. So, I am interested in increasing the use of Welsh within the bilingual workplace, such as Bangor University, by using and experimenting with methods from behavioural psychology, or behaviour-change science. As I'm sure you know, I have been observing the linguistic dynamic at this department *in situ* so that I could get a genuine *feel* of the linguistic "state", if you like, at the moment the behaviours were occurring. From a behavioural perspective, observing this linguistic dynamic was a great experience.

_____ So, that's *my* little story, but I'm more interested in *your* story. If you would allow me to ask you some questions about your linguistic behaviours, and views if you like, that would be great. Remember this is *your* story, *your* experience, *your* connection to the language – so tell me *your* story in whichever way that *you* want, whatever attitude; take as much time as you need and I'm going to try my best just to sit here and listen *without* interrupting you, unless I'm having trouble following. I'm going to try to make some notes as we go along, so please don't mind me when and if I write/type!

PHASE 2**Semi-structured interview style questions:**General questions

_____ So to begin, could you tell me about your general Welsh experience throughout your life, and to put context to it, some information about your general life would also be interesting.

Wait to see if participants says anything in response before beginning to ask the questions. - So...

- Are you a first-language Welsh speaker, or a second-language Welsh speaker?
 - Or would you like to give your own 'label' or definition, as such?
- What is your default go-to language, in general?
 - More specifically, do different situations, or indeed people, have a different default language?
- Do you challenge yourself in Welsh?
 - How often?
 - With?
 - In what situation (s)?
 - What sort of experience is this?
 - Can you give me an example, can be in *or* outside the workplace, or both...
- Do you find that using Welsh is enjoyable?
 - Anything in particular that makes it enjoyable, or *not* enjoyable?
 - Does this vary from person to person, situation to situation, your environment etc.?
 - Observed data can be discussed with participant – can then compare with their answers.
- What does the language *mean* to you, and what sort of role does it play in all the aspects of your life?
- Socially, so specifically thinking about *outside* the workplace, though it can be with your colleagues, what language, or indeed languages, do you use?
 - And do you use Welsh with some people and English, or any other languages, with others depending on who is in the group, whether or not they can speak Welsh... or any other reasons you can think of?
- Have you noticed anything specific about the way people *use* Welsh?
 - Verbally? Signage at the University? In correspondences?
 - Does anything stand out for you in the *way* it gets used?
 - From a “bilingual university” perspective, do you think anything is missing, or would you like to see anything being changed, added or even removed from your environment?
 - How would you implement this?
- Do you feel like a different person when you speak Welsh as compared to English, or of course the other way around?
 - Do you feel like you can communicate your message more clearly through Welsh or English, or maybe Wenglish, or “double-dutch”?
- Do you, or will you ever, describe yourself as *Welsh*, or a Welsh speaker?
 - Would that then be first-language or second-language, and would you use fluent, non-fluent, learner, learned? Or is there any other label or definition that you would use?
- Do you think it is important for Welsh to be spoken and revitalised?
 - Why / Why not?

Workplace specific questions

_____ I'd now like to ask you some questions about your language within the context of your work. So...

- Do you consider yourself to be fluent enough to have an informal chat with *any* of your Welsh speaking co-workers?
 - Who are they? What language status should they have for *you* to feel comfortable to use Welsh?
- When you're at work, *if* you can think about it at all because you probably haven't been keeping track, but *if* you can think about it, can you tell me who in your immediate workplace, i. e. your close colleagues, you speak what language, or indeed languages, with?
 - How often?
 - Do the languages change depending on the presence of others?
 - Or does the language change depending on the topic of your conversation?
 - *Can also compare answers to this question with the observations data.*
- Do you think that there is anybody in your immediate workforce that is *actively* trying to promote Welsh, and is trying to encourage others to *use it* within your workplace?
 - Who are they? What do they do, or, how do they do this *if* they do anything noticeable that stands out?
 - What about somebody that actively tries to promote English and encourage its use? Who are they, and what do they do to do that, if anything?
- Can you give me an example of when you felt or feel comfortable to use Welsh at work? Can you describe the context, what would you talk about, who would be present and so on?
 - And how about an example where you would feel uncomfortable?
- Are you *currently* in the process of *trying to change* your language from English to Welsh, verbally and/or in written correspondences, with any of your co-workers?
 - With how many of your co-workers? Can you tell me who?
 - How do they respond to, or feel about, this?
 - What sort of experience is this? Can you give me an example?
- Have you *already gone through* the process of *trying to change* your language from English to Welsh, verbally and/or in written correspondence, with any of your co-workers?
 - With how many of your co-workers? Can you tell me who?
 - How do they respond to, or feel about, this?
 - What sort of experience is this? Can you give me an example?
- Did you know that as part of the University's Strategy to promote the use of Welsh, it is possible for a member of staff to spend some time doing their work at Canolfan Bedwyr to experience a Welsh working environment. At *any* time in the future, do you think you would have an interest in doing this?

Mentoring scheme questions

_____ So to finish, I'd like to ask you some questions about the mentoring scheme itself.

So...

- What did you think about the mentoring scheme setup?
 - What did you enjoy, and did the scheme have any positive effects on you?
 - And what did you not enjoy, and did the scheme have any negative effects on you?
 - Did you face any barriers or obstacles in trying to meet with your mentor/mentee (s)?
 - What helped you tackle these?
 - What could anybody else have done to help you tackle these? And who could have helped?
 - What was missing from the scheme, in your opinion?
 - So, what would you add to the scheme to make it more effective? And how would you do that?
 - What had you hoped to achieve by participating in the scheme?
 - Did you reach any of these achievements?
 - Has your working relationship with your mentor/mentee (s) changed since starting the scheme?
 - Have you noticed if the scheme has had any impact on your general workplace environment?
 - Would you like to, or do you still, make arrangements to continue meeting up with your mentor/mentee (s) at a time that suits you both?
 - What would you like to do?
 - Where would you like to go?
 - When?
 - During working hours?
 - Before/after work?
 - Over the weekend?
 - How often would you like to meet?
 - Would you meet up, or would you talk over the phone or text or email, or anything else?
-

PHASE 3

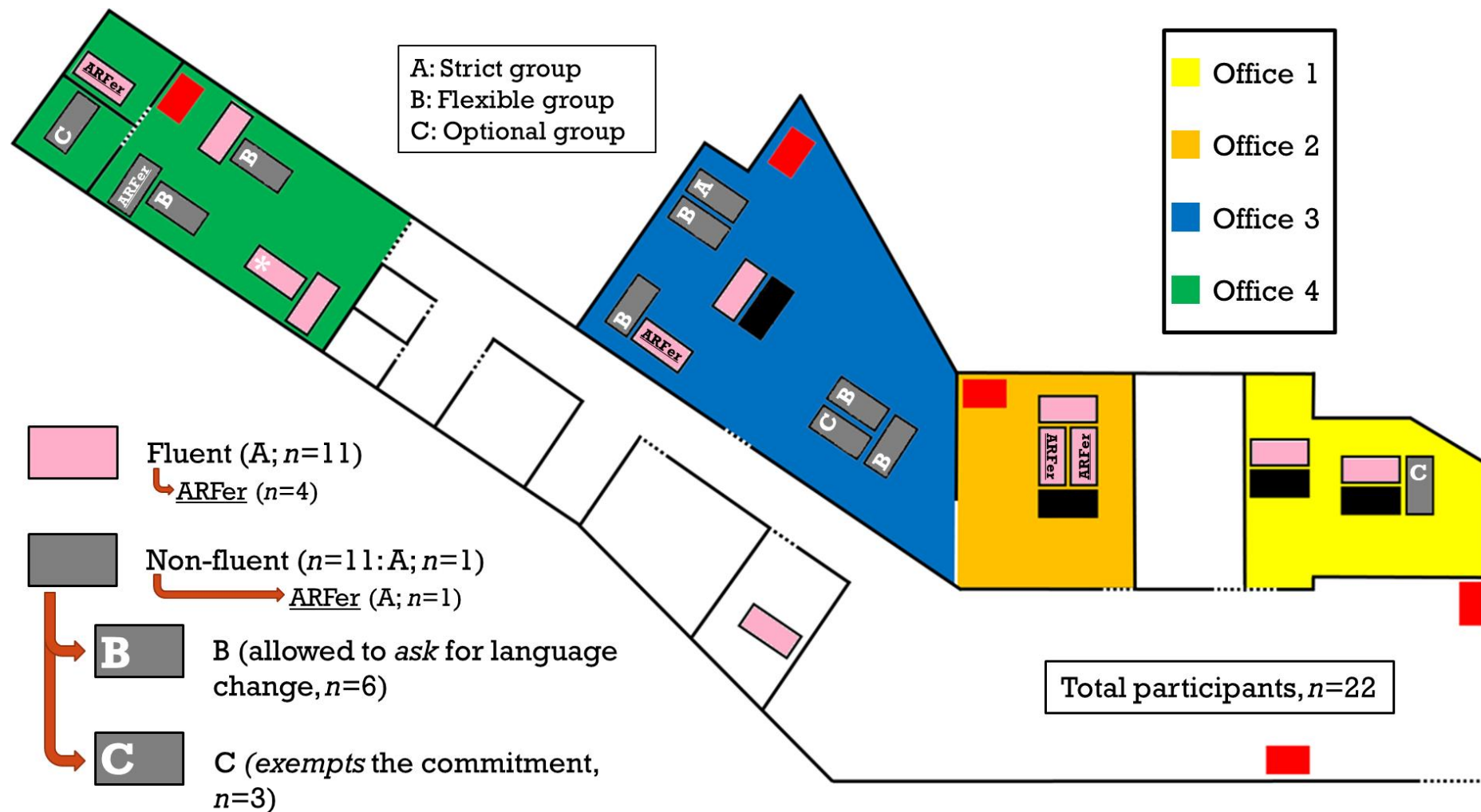
_____ Ask some further questions that arise from the note-taking (if any)...

Close:

_____ Is there anything else, anything at all that you would like to add, make a comment on, emphasize or just simply point out? Maybe something else regarding the mentoring scheme, your language skills, the linguistic dynamic at your workplace, or... Anything?

Closing remarks.

Appendix T: Floorplan of Participating Department in Study 4, Chapter 4



Appendix V: Study 4, Chapter 4 Information Sheet for Baseline Phase

School of Psychology, Wales Centre for Behaviour Change & Canolfan

Bedwyr

Bangor University

Information Sheet

Date: _____

PLEASE KEEP THIS INFORMATION SHEET FOR YOUR RECORDS

Title of study: Replicating the Eusle Methodology from the Basque Country – Changing Language Habits and Behaviour? A Self-Report and Observational Study to Assess the Influence of the Intervention on Welsh Use at the Department. *

*** IMPORTANT * This information sheet refers only to observing and self-reports during the baseline condition * IMPORTANT ***

Investigators:

Professor Carl Hughes, Director of the Wales Centre for Behaviour Change

Dr. Emily Tyler, Research Officer at the Wales Centre for Behaviour Change

Dr. Lowri Hughes, Director of the Language Scheme

Dr. Elin Walker Jones, Lecturer in Applied Behavioural Analysis

Arwel Williams, Ph.D. student, School of Psychology

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You have been invited to participate in a research study. Before you decide to participate, it is important for you to understand why the research is being done and what it will involve. Please take your time to read the following information carefully and, if you wish, discuss it with friends and relatives. Ask us if there is anything that is unclear or if you would like more information.

We are conducting this study with the department's staff members that will take part in a departmental project (the Eusle project), inspired by the Basque Country. Firstly, we are particularly interested in discovering the natural linguistic dynamics within the department, prior to introducing the intervention, i.e. which language, be it Welsh or English, gets used by who, with who, when, how frequently, and in what contexts during the baseline condition. Then, it is essential for us to discover the linguistic dynamic during and after the intervention so that discovering any changes in the dynamic is a possibility. The Eusle methodology will be introduced to all departmental staff at a time that will be convenient to all the staff where the researcher will distribute new information sheets and consent forms.

We hope to obtain permission by all individuals so that the researcher can continue to observe in the department for this new study. The researcher will not be present to listen in on the contexts of your conversations, nor to judge in any way your use or quality of language – only the linguistic dynamic will be recorded. The researcher will not interfere with your work by talking or by deliberately catching your attention – carry on with your natural routines and try to ignore the researchers’ presence. The researcher will arrange with the department director via the calendar system where and when the observations will be conducted. The director will then be responsible for circulating the information via email banner to all the staff to make everyone aware of the schedule. If you wish the researcher shares the schedule with you directly via the calendar system, just ask. Additionally, the director will circulate an email on a fortnightly basis to all participants to confirm that the observations can continue. Any issues that arise in response to these emails will result in the observations being suspended. Following this, you, the director and the researcher will have the opportunity to discuss further and see if an agreement can be reached to continue with observations. If an agreement cannot be reached, the observations will be terminated.

In addition to the observations, the researcher and the director have created an online questionnaire on Google Forms for all staff to complete on a weekly basis on their final working day of the week. The questionnaire will ask you to self-report your language use with your colleagues during that week. All records of language use will be treated with the strictest confidentiality: only the researchers will have access to this data. Notes by the researcher will be kept in digital form and all data will be treated with strict confidentiality.

The data that will be collected during this methodology will be very valuable to include in the

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researchers Ph.D. thesis, as well as to the development of services such as mentoring schemes, promoting the use of the Welsh language and discovering the actual linguistic dynamics within bilingual workplaces, rather than language status only.

If you do decide to grant permission you will be given a copy of this information sheet to keep and will be asked to sign a consent form. You will be free to withdraw at any time without penalty, and without giving a specific reason. If the study should have any negative or distressing effects on you, it will be suspended. Following this, you, the director and the researcher will have the opportunity to discuss further and see if an agreement can be reached to continue with observations. If an agreement cannot be reached, the observations will be terminated.

This study has been reviewed by the Research Ethics Committee, Bangor University, and there is absolutely no risk of harm to you. However, in the event of any complaints arising concerning this research, please address them to Mr. Hefin Francis, School Manager, School of Psychology, Brigantia Building, Penrallt Road, Bangor, Gwynedd, LL57 2AS.

Ethics application number:

If you have any further questions regarding this study, please feel free to contact
Professor Carl Hughes, School of Psychology, Brigantia Building, Penrallt Road, Bangor,
Gwynedd, LL57 2AS.

Thank you very much for your interest.

Best,

Arwel Williams, Ph.D. student, School of Psychology.

Appendix W: Study 4, Chapter 4 Consent Form for Baseline Phase

**School of Psychology, Wales Centre for Behaviour Change & Canolfan
Bedwyr**

Bangor University

Consent Form

Date: _____

**PLEASE KEEP A SIGNED COPY OF THIS CONSENT FORM FOR YOUR
RECORDS**

Title of study: Replicating the Eusle Methodology from the Basque Country – Changing Language Habits and Behaviour? A Self-Report and Observational Study to Assess the Influence of the Intervention on Welsh Use at the Department. *

*** IMPORTANT * This consent form refers only to observing and self-reports during the baseline condition * IMPORTANT ***

Ethics application number:

I hereby consent to take part as a volunteer in the aforementioned study and confirm that I have read and understood the information sheet that refers to the baseline condition. The investigation has been fully explained to me by the investigator and I fully understand their explanations – my questions and/or concerns have been answered.

Initials _____

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I understand that I can withdraw my consent at any time without any penalty and without providing a specific reason. I may also request for any data collected to be removed from the study and destroyed.

Initials _____

I understand that any data gathered from this study will be anonymised, and that it can and will be analysed and used in published work and as part of the investigator's Ph.D. thesis in a completely confidential manner with regard to my identity.

Initials _____

I hereby grant permission to give access to the researcher to the department to observe the actual linguistic dynamics.

Initials _____

I agree to complete the language use questionnaire on a weekly basis.

Initials _____

I, the undersigned (investigator), have fully explained the investigation to the above individual.

Signed _____

Date _____

Appendix X: Study 4, Chapter 4 Information Sheet for Intervention Phase

**School of Psychology, Wales Centre for Behaviour Change & Canolfan
Bedwyr**

Bangor University

Information Sheet

Date: _____

PLEASE KEEP THIS INFORMATION SHEET FOR YOUR RECORDS

Title of study: Replicating the Eusle Methodology from the Basque Country – Changing Language Habits and Behaviour? A Self-Report and Observational Study to Assess the Influence of the Intervention on Welsh Use at the Department. *

*** IMPORTANT * This information sheet refers only to observing and self-reports during the intervention & post-intervention conditions * IMPORTANT ***

Investigators:

Professor Carl Hughes, Director of the Wales Centre for Behaviour Change

Dr. Emily Tyler, Research Officer at the Wales Centre for Behaviour Change

Dr. Lowri Hughes, Director of the Language Scheme

Dr. Elin Walker Jones, Lecturer in Applied Behavioural Analysis

Arwel Williams, Ph.D. student, School of Psychology

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You have been invited to participate in a research study. Before you decide to participate, it is important for you to understand why the research is being done and what it will involve. Please take your time to read the following information carefully and, if you wish, discuss it with friends and relatives. Ask us if there is anything that is unclear or if you would like more information.

We are conducting this study with staff members that will take part in a departmental project (the Eusle project), inspired by the Basque Country. Firstly, we were particularly interested in discovering the natural linguistic dynamics within the department, prior to introducing the intervention, i.e. which language, be it Welsh or English, gets used by who, with who, when, how frequently, and in what contexts during the baseline condition. Now, it is essential for us to discover the linguistic dynamic during and after the intervention so that discovering any changes in the dynamic is a possibility.

The researcher has just delivered a presentation on the Eusle methodology. To summarise, these are the elements of the intervention: the Eusle is a person that formally commits and agrees (voluntarily, and based on a group decision) to abide to a linguistic law, i.e., speak only Welsh at work. It is expected that the Eusles speak Welsh at all times with their colleagues that has the ability to understand Welsh. The rule will not be appropriate when speaking to colleagues that will not be able to understand Welsh. You will not be allowed to ask the Eusles to change their language, however, if you are not an Eusle yourself, you can use whatever language you so wish. We hope to obtain your permission to implement the intervention at the department. We hope to obtain your permission to agree

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Registered charity number: 1141565

that some individuals at the department will accept the role of being an Eusle. If you have volunteered to be an Eusle, you will be expected to sign the relevant section of the consent form.

We hope to obtain permission by all individuals so that the researcher can continue to observe in the department for this new study. The researcher will not be present to listen in on the contexts of your conversations, nor to judge in any way your use or quality of language – only the linguistic dynamic will be recorded. The researcher will not interfere with your work by talking or by deliberately catching your attention – carry on with your natural routines and try to ignore the researchers’ presence. The researcher will arrange with the department director via the calendar system where and when the observations will be conducted. The director will then be responsible for circulating the information via email banner to all the staff to make everyone aware of the schedule. If you wish the researcher shares the schedule with you directly via the calendar system, just ask. Additionally, the director will circulate an email on a fortnightly basis to all participants to confirm that the observations can continue. Any issues that arise in response to these emails will result in the observations being suspended. Following this, you, the director and the researcher will have the opportunity to discuss further and see if an agreement can be reached to continue with observations. If an agreement cannot be reached, the observations will be terminated.

In addition to the observations, the researcher and the director have created an online questionnaire on Google Forms for all staff to complete on a weekly basis on their final working day of the week. The questionnaire will ask you to self-report your language use with your colleagues during that week. All records of language use will be treated with the strictest confidentiality: only the researchers will have access to this data. Notes by the researcher will be kept in digital form and all data will be treated with strict confidentiality. The data that will be collected during this methodology will be very valuable to include in the researchers Ph.D. thesis, as well as to the development of services such as mentoring schemes, promoting the use of the Welsh language and discovering the actual linguistic dynamics within bilingual workplaces, rather than language status only.

If you do decide to grant permission you will be given a copy of this information sheet to keep and will be asked to sign a consent form. You will be free to withdraw at any time without penalty, and without giving a specific reason. If the study should have any negative or distressing effects on you, it will be suspended. Following this, you, the director and the researcher will have the opportunity to discuss further and see if an agreement can be reached to continue with observations. If an agreement cannot be reached, the observations will be terminated.

This study has been reviewed by the Research Ethics Committee, Bangor University, and there is absolutely no risk of harm to you. However, in the event of any complaints arising concerning this research, please address them to Mr. Hefin Francis, School Manager, School of Psychology, Brigantia Building, Penrallt Road, Bangor, Gwynedd, LL57 2AS.

Ethics application number:

If you have any further questions regarding this study, please feel free to contact Professor Carl Hughes, School of Psychology, Brigantia Building, Penrallt Road, Bangor, Gwynedd, LL57 2AS.

Thank you very much for your interest.

Best,

Arwel Williams, Ph.D. student, School of Psychology.

Appendix Y: Study 4, Chapter 4 Consent Form for Intervention Phase

**School of Psychology, Wales Centre for Behaviour Change & Canolfan
Bedwyr**

Bangor University

Consent Form

Date: _____

**PLEASE KEEP A SIGNED COPY OF THIS CONSENT FORM FOR
YOUR RECORDS**

Title of study: Replicating the Eusle Methodology from the Basque Country – Changing
Language Habits and Behaviour? A Self-Report and Observational Study to Assess the
Influence of the Intervention on Welsh Use at the Department. *

*** IMPORTANT * This consent form refers only to observing and self-reports during the
intervention & post-intervention conditions * IMPORTANT ***

Ethics application number:

PRIFYSGOL BANGOR
ADEILAD BRIGANTIA,
FFORDD PENRALLT,
BANGOR, GWYNEDD, LL57 2AS

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Registered charity number: 1141565

ATHRO/PROFESSOR JOHN PARKINSON BA, PhD
PENNAETH YR YSGOL/HEAD OF SCHOOL

EBOST: seicoleg@bangor.ac.uk
EMAIL: psychology@bangor.ac.uk

www.bangor.ac.uk www.bangor.ac.uk/psychology

I hereby consent to take part as a volunteer in the aforementioned study and confirm that I have read and understood the information sheet that refers to the intervention condition. The investigation has been fully explained to me by the investigator and I fully understand their explanations – my questions and/or concerns have been answered.

Initials _____

I understand that I can withdraw my consent at any time without any penalty and without providing a specific reason. I may also request for any data collected to be removed from the study and destroyed.

Initials _____

I understand that any data gathered from this study will be anonymised, and that it can and will be analysed and used in published work and as part of the investigator's Ph.D. thesis in a completely confidential manner with regard to my identity.

Initials _____

I hereby grant permission to give access to the researcher to the department to observe the actual linguistic dynamics.

Initials _____

I agree to complete the language use questionnaire on a weekly basis.

Initials _____

I agree that certain individuals in the department will take on the Eusle role and understand what is being asked of them.

Initials _____

If you are NOT an Eusle, do not sign below.

I volunteer to be an Eusle. I understand that this means I agree to follow and abide by a linguistic law in the department, and that I will use Welsh at all times with my colleagues who are able to understand.

Initials _____

I, the undersigned (investigator), have fully explained the investigation to the above individual.

Signed _____

Date _____

Appendix Z: Study 4, Chapter 4 Handouts for Introducing the Intervention Phase

Holiadur Defnydd Iaith Language Use Questionnaire

Cwblhewch yr holiadur hwn yn wythnosol os gwelwch yn dda, mor hwyr â phosib yn eich diwrnod olaf chi yn y gwaith yn yr wythnos

Yn y cwestiynau fydd yn dilyn y tudalen hwn, mi weliwch gwestiynau am eich defnydd iaith chi gyda'ch cydweithwyr. Dewiswch y disgrifiad orau sydd yn cynrychioli'r defnydd iaith fwyngoch chi i'ch cydweithwyr yn yr wythnos, os gwelwch yn dda, o'r dewisiadau canlynol.

- Saesneg Pob Amser
- Saesneg Bron Pob Amser
- Mwy yn Saesneg nag yn Gymraeg
- Saesneg a Chymraeg yn Gyfartal
- Mwy yn Gymraeg nag yn Saesneg
- Cymraeg Bron Pob Amser
- Cymraeg Pob Amser

Holiadur Defnydd Iaith Language Use Questionnaire

Please complete this form every week, as late as possible in your final working day of the week

In the questions that follow this page, you will asked about your language use with your colleagues. Please select the closest description that best represents the language use between you and your colleagues during the past week from the following options:

- Always English
- Almost Always English
- More in English than Welsh
- Equally English & Welsh
- More in Welsh than English
- Almost Always Welsh
- Always Welsh

Enw

Mae enwau wedi eu trefnu yn ôl y wyddor trwy'r holiadur hwn.

Pwy ydych chi?

Choose ▾

Name

Names are organised alphabetically throughout this questionnaire.

Who are you?

Choose ▾

Yr Wythnos Hon yn y Gwaith

Pryd oeddech chi yn y gwaith?

	Ddim yn y Gwaith	Dim yn y Gwaith am Ychydig	Hanner Diwrnod	Dim yn y Gwaith am Ran Fawr o'r Diwrnod	Diwrnod Cyfan
Dydd Llun	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dydd Mawrth	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dydd Mercher	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dydd Iau	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dydd Gwener	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

NEXT Page 1 of 2

This Week at Work

When were you at work?

	Day Off	I Was in Work For a Bit	Half Day	I Was in Work Most of the Day	Full Day
Monday	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tuesday	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wednesday	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Thursday	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Friday	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

NEXT Page 1 of 2

Holiadur Defnydd Iaith
Language Use Questionnaire

Dewisiwch y disgrifiad sydd yn cynrychioli defnydd iaith orau rhyngoch chi a/ac...

Yr wythnos hon, dyma oedd y ddeinameg iellthyddol rhyngof i ac [Fi at] a'r ffordd arall [ata' i]

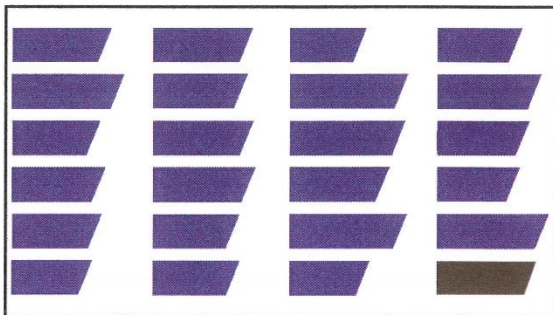
	Dim	Yn Ffwd	Yn Ffwd	Yn Ffwd	Yn Ffwd	Yn Ffwd	Yn Ffwd	Yn Ffwd	Yn Ffwd
Fi at	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ata' i	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Holiadur Defnydd Iaith
Language Use Questionnaire

Please select the closest description that best represents the language use between you and...

This week, this was the linguistic dynamic between me and [Me to] and the other way [to Me]

	Dim	Yn Ffwd	Yn Ffwd	Yn Ffwd	Yn Ffwd	Yn Ffwd	Yn Ffwd	Yn Ffwd	Yn Ffwd
Fi at	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ata' i	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



- Pum munud i lenwi'r holiadur.
- Unwaith yr wythnos;
- ... mor hwyr â phosib yn eich diwrnod olaf chi yn y gwaith yn yr wythnos.
- Five minutes to fill the questionnaire.
- Once a week;
- ... as late as possible in your final working day of the week.

Diolch am wrando!
Thank you for listening!

Cwestiynau? Questions?

arwel.williams@bangor.ac.uk

Appendix AA: Study 4, Chapter 4 Fixed Effects Estimates Table (ARFer Status)

Table 21

GLMM estimates for conversations initiated in Welsh with Phase and ARFer Status as Fixed Factors

	ARFer Status: Conversations Initiated in Welsh			
	OR	95% CI	z	p
Intercept	-0.51	-1.32,0.29	-1.25	.212
Phase <small>LINEAR</small> (PL)	1.66	1.27,2.05	8.26	<.001
Phase <small>QUADRATIC</small> (PQ)	-1.83	-2.12,-1.54	-12.73	<.001
NonARFer-NonARFer vs. NonARFer-ARFer (AS1)	1.78	0.35,3.22	2.44	.015
NonARFer-ARFer vs. ARFer-NonARFer (AS2)	1.55	-0.11,3.21	1.83	.067
ARFer-NonARFer vs. ARFer-ARFer (AS3)	-1.4	-5.86,3.06	-0.62	.538
PL: AS1	-0.05	-1.03,0.93	-0.10	.917
PL: AS2	0.48	-0.53,1.49	0.93	.351
PL: AS3	1.25	-1.54,4.03	0.88	.380
PQ: AS1	0.4	-0.27,1.08	1.17	.241
PQ: AS2	-1.54	-2.22,-0.86	-4.43	<.001
PQ: AS3	1.92	-0.45,4.29	1.59	.112
Random Effects				
τ_{00} Initiator_Partner				16.685
τ_{00} Location				0.302
N <small>Initiator_Partner</small>				320
N <small>Location</small>				4
ICC <small>Initiator_Partner</small>				0.823

	ARFer Status: Conversations Initiated in Welsh
ICC _{Location}	0.015
Observations	5912
Tjur's D	0.785
AIC	2804.5

Note. OR = odds ratio; CI = confidence intervals; AS = ARFer Status; ICC = intraclass correlation coefficient.

Appendix AB: Study 4, Chapter 4 Fixed Effects Estimates Table (Fluency Status)

Table 22

GLMM Coefficients with Phase and Fluency as Fixed Factors

	Fluency Dyads: Conversations Initiated in Welsh			
	OR	CI	z	p
Intercept	0.31	-0.35,0.98	0.92	.357
Phase <small>LINEAR</small> (PL)	2.21	1.47,2.95	5.84	<.001
Phase <small>QUADRATIC</small> (PQ)	-1.45	-1.93,-0.97	-5.87	<.001
NonFluent-NonFluent vs. NonFluent-Fluent (F1)	0.49	-0.71,1.69	0.8	.425
NonFluent-Fluent vs. Fluent-NonFluent (F2)	0.71	-0.33,1.75	1.34	.182
Fluent-NonFluent vs. Fluent-Fluent (F3)	6.97	5.72,8.21	10.97	<.001
PL: F1	-1.63	-3.02,-0.25	-2.32	.020
PL: F2	2.46	1.24,3.68	3.96	<.001
PL: F3	-0.15	-1.83,1.53	-0.18	.858
PQ: F1	-0.25	-1.12,0.61	-0.57	.567
PQ: F2	-0.93	-1.69,-0.17	-2.38	.017
PQ: F3	1.88	0.80,2.96	3.41	.001
Random Effects				
τ_{00} Dyad				5.36
τ_{00} Zone				0.218
N _{Dyad}				320
N _{Zone}				4
ICC _{Dyad}				0.604

	Fluency Dyads: Conversations Initiated in Welsh
ICC _{Zone}	0.025
Observations	5912
Tjur's D	0.788
AIC	2533.837

Note. OR = odds ratio; CI = confidence intervals; FL = Fluency Level; ICC = intraclass correlation coefficient.