

IMPLICIT ASSOCIATIONS WITH WELSH IN TWO EDUCATIONAL CONTEXTS

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Abstract

This study explores whether adolescents in Welsh- and English-medium schools in Cardiff, Wales, differ in the strength of their positive and negative associations with the Welsh language. An Implicit Association Test (IAT), which uses latency times to determine associations with dichotomous target concepts, is employed. The results suggest that there are indeed differences in both the strength and direction of positivity toward the Welsh language between pupils at different types of schools. Pupils from the Welsh-medium school displayed significantly more positive associations with the Welsh language than by pupils from the English-medium school, even when controlling for first language and parental language effects. While self-rated proficiency in Welsh is positively correlated with implicit associations with the language at the Welsh-medium school, no such correlation was found among pupils at the English-medium school. Finally, pupils from the Welsh-medium school who opted to complete the IAT in Welsh had significantly more positive associations with Welsh than those who completed the task in English, which is evidence of an implicit association-behaviour link. The implicit association data suggests that there may be a substantial ideological divide between Welsh- and English-medium schools in Cardiff.

1. Introduction

One of four nations that comprise the United Kingdom, alongside Scotland, Northern Ireland, and England, Wales is a country of around 3 million people. Although the majority language of Wales is English, nearly one-fifth of its inhabitants—around 562,000 speakers—also speak Welsh, a Celtic language that is thought to predate English on the British Isles by nearly 1,000 years (Lewis, 2008). While Welsh-English bilingual speakers can be found throughout Wales, they have traditionally been concentrated in the ‘heartland’ areas of northwest and west Wales, as shown in Figure 1.

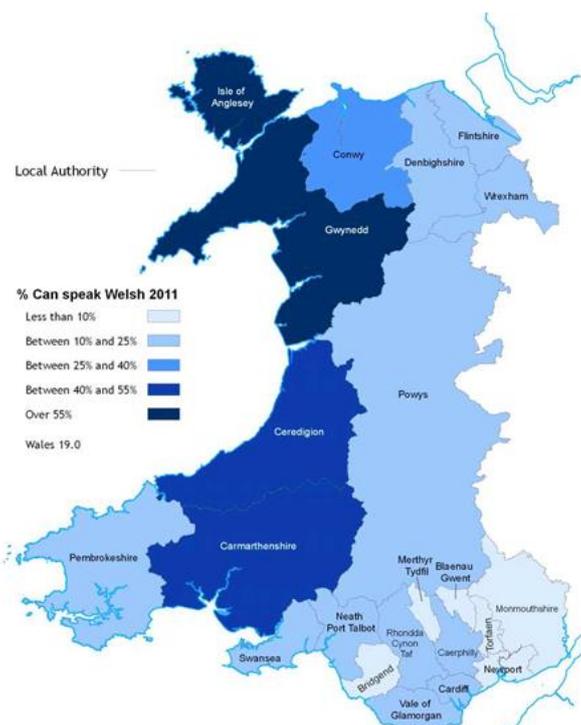


Figure 1. Proportion of people (aged 3 and over) able to speak Welsh, by local authority, 2011 (Welsh Government, 2012).

Welsh is often cited as one of the ‘success stories’ of the endangered language movement (Berdichevski, 2004). Language revitalisation efforts over the past fifty years have succeeded in slowing, and even beginning to reverse, language decline in Wales. Between 1991 and 2001, the number of Welsh speakers increased from 18% to 20.5%, the first such increase recorded since 1901 (Price, 2010). This has been hailed as a huge victory for the language and has been attributed in large part to increased Welsh instruction in English-medium schools and the expansion of Welsh-medium schools. Indeed, young people between the ages of 3 and 15 represent the largest proportion of Welsh speakers in the country, at around 30% (Office for National Statistics, 2011). Since the 2001 census, however, there has been mounting evidence that many pupils, even fluent Welsh speakers, infrequently use the Welsh language outside of school (Jenkins, 2001; Jones & Martin-Jones, 2004; Thomas & Roberts, 2011). Additionally, there is a marked decrease in Welsh language use as children get older (Baker, 2003; Jones & Martin-Jones, 2004; Edwards & Newcombe, 2005; Hodges, 2009). Indeed, despite a 31% increase in the number of Welsh-medium schools between 1989 and 2009 (Musk, 2010), the latest Census language statistics revealed an overall *decrease* in speakership from 20.5% in 2001 to 19% in 2011 (Office for National Statistics, 2011). A speaker for the Office of National Statistics posited that this was likely to be the case because pupils were not using Welsh outside of the classroom (BBC News, 11 December 2012).

Young people have long been identified as a critical demographic for language revitalisation (Fishman, 1991), and in the Welsh context researchers have begun to ponder the reasons for their diminished use of Welsh over time. The problem appears to lie not in the delivery of Welsh-medium instruction, which is flourishing, but in the use of Welsh as an everyday language. Several studies have shown that adolescents do not feel that the language is useful for employment (Davies & Trystan, 2011), and that it is not practical for everyday communication with those who also speak English, or necessarily linked to their Welsh identities (Coupland et al., 2005; Price, 2010). Others have expressed trepidation about speaking imperfect or code-mixed Welsh, as purist attitudes prevail in certain sectors of the population (Robert, 2009).

The question of why English seems to be the preferred medium of communication among Welsh adolescents, particularly in regions with low densities of Welsh speakers, is critical to language planning. As of this moment, there is no clear resolution to this question and as such there is no clear path for moving forward. Interest in this topic has arisen in the media, in the Welsh government, and, to a lesser extent, among researchers in sociolinguistics, bilingual education, and language shift. Much of the research on this topic has taken the form of self-reported, structured questionnaires. In 2010, BBC One produced a documentary entitled *The Welsh Knot*, which was dedicated to addressing the question of why children opted to speak English outside of school, and was based on a language attitudes survey (Williams, 2010). In 2012, BBC Radio Cymru commissioned a large-scale survey of all age groups on attitudes toward the Welsh language (BBC News Wales, 2012). In 2013, BBC Radio Cymru, the Welsh-language television station S4C, and the Welsh Assembly government jointly commissioned a research study on language attitudes and use that incorporated some qualitative data and a literature review on language alongside use survey data (Beaufort Research, 2013). While these studies point to some important patterns in motivations for language choice and indicate broadly positive attitudes toward Welsh, they tend to be methodologically uniform and, in general, lacking in-depth sociolinguistic and/or social psychological analysis.

Fortunately, a mounting body of research examining young people's attitudes toward the Welsh language has emerged over the past decade, through questionnaire data (Coupland et al., 2005; Price, 2010), focus groups (Davies & Trystan, 2011; Musk, 2006; 2010), matched-guise tests (Robert, 2009), interviews (Hodges, 2009), and observation of code-switching behaviour (Musk, 2006). These studies and others have made a tremendous contribution to our understanding of attitudes toward the Welsh language and the motivations behind language choice. Nevertheless, a multitude of questions remain, including the role of the school in fostering particular attitudes, the role of the Welsh language in Welsh identity, and a realistic assessment of whether language planners are capable of improving attitudes.

What all of these studies do reveal is that language attitudes are highly complex, multidimensional, contextually situated, and dynamic. Such a complex issue requires a methodology that incorporates qualitative data alongside quantitative figures, implicit measures alongside explicit ones, and a cross-disciplinary approach. The present study focuses on the implicit dimension, using a methodology that has been not yet been applied to the context of the Welsh language in Wales. Thus, it fills a gap by contributing to the understanding of ethnolinguistic social contexts in Wales through exploring social cognitive processes.

1.1 Language attitudes and revitalisation

The link between attitude and language vitality has long been acknowledged by researchers of language shift (Fishman, 1964). Although linguistic attitudes and behaviours do not always correlate neatly (Ladegaard, 2000), attitude has nonetheless been identified as both a measure of current vitality, and a predictor of its vitality in the future (Baker, 1992). This is especially true for minority languages, as “attitudes play a key role in their successful transmission, revitalisation and survival” (Loureiro-Rodriguez, 2012:1) and “appear to be important in language preservation, restoration, decay or death” (Baker, 1992:9), which can be seen in other Celtic languages such as Irish, Gaelic, and Scottish Gaelic (Edwards, 2010). Some have suggested that fostering positive attitudes is particularly critical during the teenage years, when young people are given the freedom to choose whether to continue using the language or to let their language skills deteriorate (Bo-Yuen Ngai, 2007; Jones & Uribe-Jongbloed, 2013; Ó Riagáin et al., 2008). Indeed, in some areas of Wales, particularly the southern and

eastern regions, there is a noted incongruence between the successful implementation of Welsh-medium education and the lack of use in the family and the community (Hodges, 2012). Consequently, even if today's adolescents desire to pass the language on to their children later in life, they will lack the necessary language skills to do so. This may explain why, while the Welsh language appears to have stabilised somewhat over the past several decades in demographic terms, its health in terms of community and family use is unsteady.

1.2 Role of the educational institution in the formation of language attitudes

The relative stability of the Welsh language over the last three decades can be attributed in large part to the proliferation of Welsh language education in Wales. As of 2012, there were 517 Welsh-medium primary and secondary schools in Wales—one school for every 903 pupils—serving roughly 25% of the pupil population. In regions with particularly high concentrations of Welsh speakers, nearly all pupils attend Welsh-medium schools; in the northwest local authority of Gwynedd, for example, 98.5% of pupils attend Welsh-medium schools. In regions with high concentrations of English speakers, however, there may be few or no Welsh-medium alternatives to English-medium schools.¹ For instance, in the southeastern local authority of Monmouthshire, only 2.5% of pupils attended Welsh-medium schools in 2012. In other regions, the proportion varies. In Cardiff, where the present study takes place, 13.3% of pupils attended Welsh-medium schools.

The term 'Welsh language education' has two primary manifestations in Wales. Around 80% of secondary school pupils attend English-medium schools, where Welsh is offered as a second language. About 20% attend Welsh-medium or bilingual schools, where the majority of the curriculum is taught through the medium of Welsh, and where fluency is the target outcome (Welsh Assembly Government, 2013). Both forms of Welsh language education have grown since the passing of the 1988 Welsh Language Act, which granted Welsh the status in the National Curriculum of a 'core subject' for Welsh-medium schools and a 'foundation subject' in English-medium schools² Wales has seen a dramatic expansion in Welsh-medium education at both the primary and secondary levels, and community demand continues to increase. In fact, as of January 2012, there were 56 Welsh-medium secondary schools, comprising about a quarter of secondary schools in the country. The increase in the availability and uptake of Welsh-medium education was clearly reflected in the 2011 Census, which showed that children aged 5–14 comprise the largest percentage of Welsh speakers in Wales (ONS, 2011).³

The two forms of Welsh language education differ dramatically in their target outcomes. The goal of Welsh-medium education is to produce fluent Welsh-English bilinguals who will, ideally, pass the language on to their children and thus perpetuate its vitality. This is achieved by providing "as much provision through the medium of Welsh as is necessary for learners to achieve fluency in two languages" (WAG, 2010:9). The goal in English-medium schools, however, is for learners to "[benefit] from opportunities to develop language skills which enrich their experience of living in a bilingual country" (WAG, 2010:9). Because Welsh learners receive only a maximum of a few hours per week of Welsh language instruction

¹ In four local authorities (Merthyr Tydfil, Blaenau Gwent, Monmouthshire and Newport), there were no available Welsh-medium secondary schools as of 2012 (Office for National Statistics, 2012).

² In practice, this means pupils in Welsh-medium schools are assessed in Welsh, while pupils in English-medium schools are required to take courses in Welsh from ages 5-16, but are not required to complete GCSE exams in Welsh.

³ 24% of Welsh speakers in Wales are in this age bracket (Office for National Statistics, 2011).

throughout their statutory education⁴, they are unlikely to become fluent speakers, but rather gain basic language skills such as those one might acquire in a secondary-level foreign language course. In addition, English-medium schools must comply with certain requirements designed to raise the profile of the Welsh language. These include displaying bilingual signage around the school, making communications with parents available in both languages, and using a few token Welsh phrases in the classroom on a daily basis.

The discrepancy in language proficiency of pupils in these two types of schools is an important consideration with respect to attitudes toward Welsh. There is a well-documented link between language proficiency and attitude (Baker, 1992; Garrett, 2010). Pupils who feel their language skills are lacking may have negative attitudes about the language, and likewise those who harbour negative feelings about a language are less likely to succeed in their learning of that particular language. Conversely, positive attitudes can be both the reason for and the result of high levels of language achievement. Baker asserts that ‘there is considerable evidence that ability in a language and attitude to that language are linked . . . attitudes and achievement may be both the cause and effect of each other. In a cyclical, spiral relationship, one builds on the other—in an upward or downward relationship’ (1992:44). This assertion is in line with those propounded by Coupland et al. (2005), whose large-scale study of perceived ethnolinguistic vitality demonstrated that engagement with Welsh, feelings of Welshness, and perception of demographic vitality were all correlated with language competence. This has critical implications for assessing differences in attitude between Welsh- and English-medium schools, where the gap in proficiency levels might well be reflected in attitudes.

Proficiency, of course, is not the sole indicator of attitude toward the Welsh language. Family language, media, and other social experiences are substantial influences on attitudes toward language (Garrett, 2010). Likewise, the level of proficiency facilitated by the school is not its only influence on the attitudes and perceptions of its pupils. Schools explicitly and implicitly communicate ideological positions on language use through the written materials they display, the way Welsh is discussed in the classroom, the linguistic behaviours of teachers and staff, and official policies. Fishman asserts that “schools are often important in connection with enriching their pupils’ attitudinal and overt-implementation commitments to language by providing and stressing the historical, cultural and moral rationales for such commitments” (1991:372). Different types of schools encourage such commitments in different ways and to different degrees. Baker points out that “a school where covert anti-Welsh attitudes are conveyed is likely to have a different effect from schools where the survival and nurturance of Welsh language cultural forms is one prime *raison d’être*” (1992:44). While Baker is not referring explicitly to differences between Welsh- and English-medium schools here, the principle could be aptly applied to that context. Welsh-medium schools are staffed by Welsh speakers, are engaged with other Welsh-speaking communities, and are often highly motivated by prospects for language revitalisation. English-medium schools, on the other hand, have the flexibility to be far more diverse in their ideological positions, yielding varying results.

Previous work on language ideologies in English-medium schools in Wales reveals the range of orientations toward the Welsh language that results from this flexibility. The Welsh-Medium Education Strategy developed by the Welsh Assembly Government (2010) is purportedly based on the foundations of *Iaith Pawb* (‘Everyone’s Language’), a seminal document put forth by the WAG that calls for “a truly bilingual Wales, by which we mean a country where people

⁴ Since Welsh has been designated a ‘core subject’, it is up to the individual school to decide how many hours per week are dedicated to Welsh instruction, which in practise ranges from 30 minutes to three hours. Additionally, the school determines whether pupils are required to sit GCSE exams in Welsh.

can choose to live their lives through the medium of either or both Welsh or English” (WAG, 2003:1) and which endeavours to “create the right conditions in which the Welsh language can grow and flourish in all aspects of Welsh life” (2003:2). Though the Welsh-Medium Education Strategy is intended for all schools in Wales, this ideology is manifested differently in different settings. Coupland et al.’s comprehensive examination of language attitudes in secondary schools throughout Wales led them to conclude that “the policy of compulsory teaching of Welsh to age 16 in Welsh secondary schools can [...] be said to be delivering some level of Welsh language competence to the great majority of students in Wales [...] but not to be delivering the ideological principle of *Iaith Pawb*” (2005:16). This was evidenced by a relatively low commitment to interactional uses of Welsh in the English-medium schools studied, despite a high level of appreciation of its symbolic and ceremonial values.

In her study of language ideologies in two secondary schools in southwest Wales, however, Selleck (2013) found evidence that some ideological principles of *Iaith Pawb* were indeed present in one English-medium school setting. Selleck’s focus group data in an English-medium school indicated an openness to the idea of using both Welsh and English in daily life, albeit a code-mixed version of Welsh frequently referred to as ‘Wenglish’. Her data showed that the English-medium school was more closely aligned with the ideology of ‘choice’ laid out by *Iaith Pawb* than the Welsh-medium school, precisely because at the English-medium school, “a particular institutional ideology of bilingualism (flexible bilingualism) gives “choice” to students, offers discretion to students, and increases the potential pool of new learners and users of Welsh” (2013:18). In contrast, the Welsh-medium school in her study promoted an ideology of monolingualism that restricted the language choices of its pupils within the school setting.

The present study aims to consider these ideological discrepancies through the lens of implicit social cognition, defined as “the introspectively unidentified (or inaccurately identified) trace of past experience that mediates R’ where R refers to the category of responses that are assumed to be influenced by that construct (Greenwald & Banaji, 1995:5; cited in Nosek et al., 2007:266). While the study of language ideologies requires a more multidimensional analysis than is possible with a single measure, the investigation of implicit associations can shed light on ideological processes at work in different environments. Van Dijk (1995) conceptualises ideologies as the interactions between cognitive processes and social interactions, manifested in interactional behaviours. That is, attitudes do not exist in a cognitive vacuum, but rather function within social structures. In this view, attitudes are “influenced by powerful ideological positions” (Garrett, 2010:34), and can therefore point to the nature of the social contexts in which they operate. In this study, the examination of implicit attitudes is expected to prove a useful tool for uncovering broader ideological structures in Welsh schools.

2. Methodology

2.1. About the IAT

The Implicit Association Test has its roots in social psychology, and was first developed by Greenwald et al. (1998) to examine social stereotypes. Its purpose is to indirectly measure the strength of associations between target concepts and diametrically- opposed positive or negative attributes. This information is obtained via a computer-based categorisation task in which participants match dichotomous attributes (e.g., ‘friendly’ and ‘mean’) to a target concept representing ‘positive’ or ‘negative’, and textual or pictorial exemplars (e.g., a picture

of a man and a picture of a woman) to the target concepts being assessed (e.g. ‘male’ and ‘female’). In three of the trial blocks, only one target concept is shown in each corner of the screen, which serves to familiarise the participant with the task. In two pairs of trial blocks, however, attribute and exemplar stimuli are mixed, and all four target concepts appear at once, where one target concept is matched with ‘positive’ and the other is matched with ‘negative’ (e.g., ‘MALE OR POSITIVE’ on the left side, ‘FEMALE OR NEGATIVE’ on the right side). The target concepts are then reversed (i.e., ‘FEMALE OR POSITIVE’ on the left side and ‘MALE OR NEGATIVE’ on the right). The difference in reaction times between these two block pairs indicates the strength of the association, where a faster mean reaction time and fewer errors indicate an easier categorisation and thus a stronger association.

The primary benefit of the Implicit Association Test is its capacity to indirectly access information about attitude, associations, and stereotypes that may be difficult to elicit through more direct methods. For example, social desirability bias, which is error arising from the desire to avoid embarrassment or disapproval, may impede a participant from answering a questionnaire item honestly (Garrett, 2010). The IAT has also been tested extensively for ‘fakeability’ and has been found to be far more resistant to dishonest manipulation than self-reporting (Nosek et al., 2007). Additionally, the IAT may reveal associations of which the participant is not consciously aware (Nosek et al., 2007). Like other indirect measures that have been used in sociolinguistics, such as the matched-guise test (Lambert, 1960) and priming (Bourhis and Giles, 1976; Hay and Drager, 2010), the IAT is a valuable complement to more direct elicitation techniques. The present study is the first to use the IAT to examine attitudes toward the Welsh language, and indeed the first to compare implicit associations toward two different languages on a large scale.⁵

2.1.1. The IAT and attitude

There has been some question as to whether the IAT is indeed a measure of implicit attitude. To begin with, there is debate about how attitude should be defined both within and across the fields of sociolinguistics, social psychology, sociology and others. The concept of attitude originates from social psychology but has been applied across numerous fields, each of which has had to grapple with its meaning in particular contexts and in frameworks built upon certain theoretical assumptions. Social psychologists and social constructionists, in particular, disagree about whether attitude is a stable entity of the mind that can be discovered through behaviour, or whether it is purely a socially-constructed phenomenon that emerges through interaction (Soukup, 2012). Discursive psychologists attempt to bridge this gap by defining attitude as a cognitive component of a larger ideological framework wherein mental representations and the social actors who possess them interact (Van Dijk, 1995). In any case, it is generally agreed that attitudes a) are complex in both their multifaceted nature and manifestations (Garrett, 2010); b) incorporate cognitive, affective, and behavioural components (Baker, 1992); and c) are at least somewhat socially embedded. Given these caveats, Garrett et al.’s definition of an attitude as ‘an evaluative orientation to a social object’ (2003:3) provides some common ground for analysis.

A further question is whether the IAT measures ‘attitude’ in the same way that an explicit instrument, such as a questionnaire, might. Karpinski and Hilton’s (2001) study showed that data from their IAT and from an explicit task patterned independently of one another. Because of this fact, they assert that the IAT detects “the associations the person has been exposed to in

⁵ In his doctoral dissertation, Redinger (2010) carried out a pilot IAT study using two languages, Luxembourgish and French. His study, however, involved only five participants.

his or her environment, not that individual's level of endorsement regarding the attitude object" (2001:786). Uhlmann et al. (2012) argue that while there may be discrepancies between explicitly endorsed views and automatic associations, they are not totally independent entities. Cultural and environmental factors have an effect on people's orientations toward evaluative objects whether those orientations are explicitly endorsed or not, which may in turn affect behaviour. Uhlmann et al. maintain that "implicit attitudes reveal the power of cultures to reproduce themselves in individual minds and the futility of conscious protests to the contrary" (2012:250). Though this assumes a rather deterministic view of the relationship between culture, attitude, and behaviour, it does acknowledge the permeability of those aspects.

Although it is necessary to be cautious in making claims about what the IAT actually does measure, the data it provides are valuable in any case, if judicious choices are made concerning how to make use of them. For this study, participants' environmental exposure is particularly relevant, since it is concerned with examining the relationship between attitudes and ideologies in different educational contexts. Therefore, regardless of whether the associations measured by the IAT reflect the environment or personal subjectivities, they provide information about ideological frameworks. For analytical purposes in this study, 'implicit attitude' will be defined by the strength of association between positive or negative attributes and the target concepts.

2.1.2. The IAT and behaviour

Evidence regarding whether implicit attitudes correlate with specific behaviours is fragmentary. The inconsistency in the relationship between behaviour and attitude has long been a problem in all types of attitude research (Garrett, 2010; Ladegaard, 2000). Incongruent attitude-behaviour relationships may be due to conflicts between intention and actual commitment, competition between multiple attitudes, and an inability to control one's behaviour. Likewise, the IAT has performed inconsistently in correlations with behaviours, particularly for stigmatised topics (Swanson et al., 2001). However, there is evidence that the IAT does outperform explicit self-report in predicting behaviour, especially for socially sensitive subjects where social desirability bias is a factor. In a meta-analysis of 122 IAT reports, Greenwald et al. (2009) found that while both implicit and explicit measures were able to predict behaviour to some degree, there was far less variability in effect size for implicit measures. Furthermore, the capacity of IAT measures to validly predict behaviour outperformed that of explicit measures in studies involving black-white interracial behaviour. For this reason, the IAT is a useful instrument for studies involving attitudes toward controversial topics, including aspects of language and culture.

2.1.3. The IAT in sociolinguistic research

Despite its popularity in social psychology, the IAT has been adopted only recently by sociolinguists. The majority of these studies have examined attitudes toward specific linguistic groups. In her study of New Zealanders' degree of accommodation to Australian English, Babel (2010) found that attitude toward Australia in general was a significant predictor of phonetic convergence, or accommodation. Redinger (2010) piloted a small-scale IAT as part of a comprehensive study on language attitudes in Luxembourg and found that his participants associated Luxembourgish with more positive attributes than French. Pantos (2012) conducted an IAT in which linguistics pupils were asked to align American-accented and Korean-accented English speech with 'GOOD' and 'BAD', and found a pro-American-accented English bias, which contradicted participants' questionnaire responses. Recently, Campbell-

Kibler (2012) used the IAT to investigate sociolinguistic and sociophonetic variability. Her data revealed associations between the American English variable (ING) and Northern/Southern states, blue-collar/white-collar professions, and country singers/news anchors. Using audio files, she also tested associations between (ING) and region, [ay] monophthongisation, and [t]-release. The data showed that there was indeed an association between region and the socially enregistered [ay] monophthongisation, but not the less enregistered [t]-release. Finally, she correlated her IAT data with two more explicit measures, and found little correlation for individual speakers. Nonetheless, she regarded the IAT as a promising tool for the study of sociolinguistic cognition.

2.2. Context of the study

The Implicit Association Test discussed herein is one component of a larger doctoral dissertation study on the relationship between the ideologies espoused in Welsh- and English-medium schools, adolescents' attitudes toward the Welsh language, and the impact of language revitalisation efforts in Cardiff's educational institutions. Its role in this broader context is to gain insight into the implicit positive and negative associations pupils have with the Welsh language, with the English language as a contrastive backdrop. Critically, this study aims to obtain information about attitudes that may be obscured by more explicit measures. The IAT used for the present study was modelled after the one used in Redinger's (2010) study of attitudes toward Luxembourgish and French, and the parameters laid out by Nosek et al. (2007) were used to guide both the design of the instrument and the analysis of the data.

2.3. Community context

The study took place in Cardiff, the capital of Wales and its largest city at 346,100 residents. 10.6% of Cardiff's population is Welsh-speaking, compared to the national average of 19% (ONS, 2011). 11.6% of pupils attend one of Cardiff's three Welsh-medium secondary schools (Welsh Assembly Government, 2013). Parental demand for Welsh-medium education has been particularly high in this region, owing in part to the city's increased need for Welsh-speaking employees. Perhaps surprisingly, Cardiff has received relatively little attention in sociolinguistic research on Wales in the past decade. Recent language attitude studies have been generally conducted in areas of Wales with either very high or very low concentrations of Welsh speakers (Coupland et al., 2005; Price, 2010; Williams, 2009). While Cardiff is not generally regarded as the *cultural* capital of Wales (Carter, 2010)⁶, it is a ripe domain for sociolinguistic study in several respects. First, it has a unique status as the largest urban centre in Wales, drawing a diverse population from all over the world. Approximately one-fifth of the population of Cardiff belongs to an ethnic minority group, compared to 4.4% in Wales as a whole. This ethnic and, in some cases, ethnolinguistic diversity introduces a level of complexity in orientation toward Welsh and Welshness. Second, the number of Welsh speakers in Cardiff has increased dramatically over the past twenty years, mainly due to young Welsh speakers seeking employment in the public sector, while former rural strongholds of the Welsh language such as Carmarthenshire and Ceredigion are rapidly losing speakers. In fact, Cardiff was one of only two local authorities in Wales to experience an increase in Welsh speakership between 2001 and 2011 (ONS, 2011). This demographic shift has prompted the Welsh Assembly Government to rethink its language planning strategies and to assess the

⁶ Aberystwyth, a city in a dominantly Welsh-speaking region of west Wales, is widely regarded as the unofficial 'cultural capital' of Wales (Carter, 2010).

potential for language revitalisation in urban areas (WAG, 2010:37). Finally, Cardiff houses the central offices of some of the country's most prominent Welsh-language institutions, including BBC Radio Cymru, S4C, the Welsh Assembly Government, and Cardiff University, making it a crux of influence for language policy and planning.

2.4. *Research sites*

The study was conducted at one Welsh-medium and one English-medium secondary school in Cardiff. The Welsh-medium school, which I will refer to as Ysgol Gyfun Gymraeg ('Welsh Comprehensive School'), or YGG, is one of three designated Welsh-medium secondary schools in the city.⁷ It is a comprehensive secondary school, serving pupils from years 7 to 13, inclusive (ages 11 to 18). In 2013, the school's enrolment was around 850 pupils, a number which has increased steadily since the school's opening. Due to its large catchment area, YGG has a diverse pupil population from a wide range of ethnic, linguistic, and socioeconomic backgrounds. Approximately 20% of the pupils come from homes where the predominant language spoken is Welsh; other home languages include Urdu, Punjabi, Korean, Spanish, French, and German, although nearly all pupils' primary home language is English. At YGG, all courses except English are taught through the medium of Welsh, and pupils sit all exams, including GCSEs, in Welsh.⁸ For this reason, pupils are expected to speak Welsh at all times throughout the school day and face sanctions if they do not. In practise, however, it is well acknowledged by staff that most pupils primarily speak English outside the classroom, including on school grounds.

The English-medium school, which I will call English-Medium Secondary, or EMS, also caters to pupils from Years 7 to 13, and is larger than YGG with approximately 1,500 pupils. EMS is situated in a relatively affluent area of the city, and is ethnically and linguistically diverse. 37% of the pupils come from minority ethnic backgrounds, and many speak languages other than English at home, including Czech, Polish, Cantonese, Bengali, Cebuano (also known as Visayan), Hindi, and Spanish, among others. Only 1% of pupils speak Welsh as a first language. At EMS, as in all English-medium secondary schools in Wales, pupils are required to take Welsh as a second language from ages 5 to 16. The aim of this language policy is not to produce fluent speakers, but to teach pupils basic communicative skills in Welsh as well as to educate them about Welsh culture. Therefore, although pupils are encouraged to speak as much Welsh as they can inside the Welsh classroom, they are allowed to speak English as needed, and are permitted to speak whatever language they like outside the classroom. In practise, as in YGG, the preferred language is almost always English.

2.5. *Participants*

Sixty pupils from each school completed the Implicit Association Test. Thirty from each school were in Year 9 (ages 13–14), and thirty were in Year 10 (ages 14–15). Participants were selected by a staff member at each school, each of whom was told to choose participants from a wide range of ethnic and linguistic backgrounds and to balance for gender.⁹ Data from one

⁷ The third Welsh-medium school opened in 2012 to keep up with parental demand for Welsh-medium education in Cardiff.

⁸ Foreign language courses are taught primarily through the medium of the target language; however, certain concepts are explained in Welsh.

⁹ At the time of the IAT, personal information such as home language and ethnicity had not yet been collected. This information was gathered during the questionnaire phase of the larger study. In order to reduce the possibility of biasing IAT results with participants' explicit consideration of language attitudes, the IAT was conducted prior

pupil at each school were discarded due to user error that interfered with the recording of reaction times, leaving a total of 118 participants. Of the 59 pupils who participated in the IAT from YGG, 31% (n=18) spoke Welsh as a first language, 15% (n=9) learned English and Welsh at the same time, 47% (n=28) spoke English as a first language, 3% (n=2) had a first language other than English or Welsh, and for two, no data were available. 61% (n=36) of participants had at least one caregiver or parent who was proficient in Welsh.¹⁰ At EMS, 88% (n=52) spoke English as a first language, 10% (n=6) had a first language other than English or Welsh, and for one, no data were available. No participant at EMS had Welsh as a first language, but 7% (n=4) had one caregiver or parent who was proficient in Welsh.

	EMS	N	YGG	N
Welsh	0%	0	31%	18
English	88%	52	47%	28
Learned Welsh and English concurrently	0%	0	15%	9
Other	10%	6	3%	2
No Data	1%	1	3%	2

Table 1. First language by school

2.6. Instrument design

The IAT was designed and run using the Python-based experimental software PsychoPy (Peirce, 2007). The task was completed on iMac 21 Core II Duo computers at YGG and on Dell PCs at EMS. Due to teachers' scheduling preferences, the IAT was administered over four sessions of thirty pupils each. Four pupils at EMS were missing from their session and therefore completed their test several days later. Pupils at YGG were given the choice to perform the IAT in English or in Welsh. Since it was determined that the level of Welsh language in the Welsh IAT was too advanced for the pupils at EMS, all pupils from that school performed the IAT in English.

Five attribute pairs were selected for the IAT. Four of the pairs were selected based on salience and relevance to Welsh- and English-medium secondary school pupils, based on pilot interview data. These included INTELLIGENT / UNINTELLIGENT, USEFUL / IMPRACTICAL, COOL / UNCOOL, and HARDWORKING / LAZY. The fifth set of attributes, WEAK / STRONG, was included to incorporate an element of ethnolinguistic vitality perception, which has appeared frequently in explicit Welsh-language attitude studies (Coupland et al., 2005; Giles & Johnson, 1987). The IAT was piloted with five Welsh-English bilingual participants (who did not participate in the main study) before the main study and the attribute stimuli were judged to be appropriate.

to the questionnaire intentionally. Therefore, due to school policies on confidentiality, only the staff had access to personal information, and I thus had to rely upon their judgment for sample selection.

¹⁰ Proficiency was based participants' estimation of their parents' proficiency on a 7-point Likert scale, where 1 was labeled 'no knowledge of Welsh' and 7 was labeled 'completely fluent'. A score of 5 or above was classified as 'proficient' for analytical purposes.

The order in which attribute stimuli appeared was randomised within PsychoPy. Additionally, the order in which the judgment attributes were presented was counterbalanced, such that half the participants saw ‘WELSH LANGUAGE OR POSITIVE’ in Blocks 3 and 4 and ‘WELSH LANGUAGE OR NEGATIVE’ in Blocks 6 and 7, while the other half saw ‘WELSH LANGUAGE OR NEGATIVE’ in Blocks 3 and 4 and ‘WELSH LANGUAGE OR POSITIVE’ in Blocks 6 and 7.

2.7. Procedure

The IAT consisted of seven trial blocks, including five practise blocks and two test blocks.¹¹ Blocks 1, 2, 3, 5, and 6 consisted of 20 trials each, while Blocks 4 and 7 each had 40 trials. Participants were instructed to match the terms that appeared in the centre of the screen with the terms in the right- and left-hand corners of the screen by pressing the ‘D’ or ‘K’ keys. If the answer was incorrect, a red ‘X’ would appear and participants would have four seconds to correct their responses before the next stimulus item appeared.

In Block 1, the target concepts ‘WELSH LANGUAGE’ and ‘ENGLISH LANGUAGE’ appeared in the upper right- and left-hand corners of the screen, respectively, as shown in Figure 1. In the centre of the screen, these same phrases appeared as exemplars.¹²

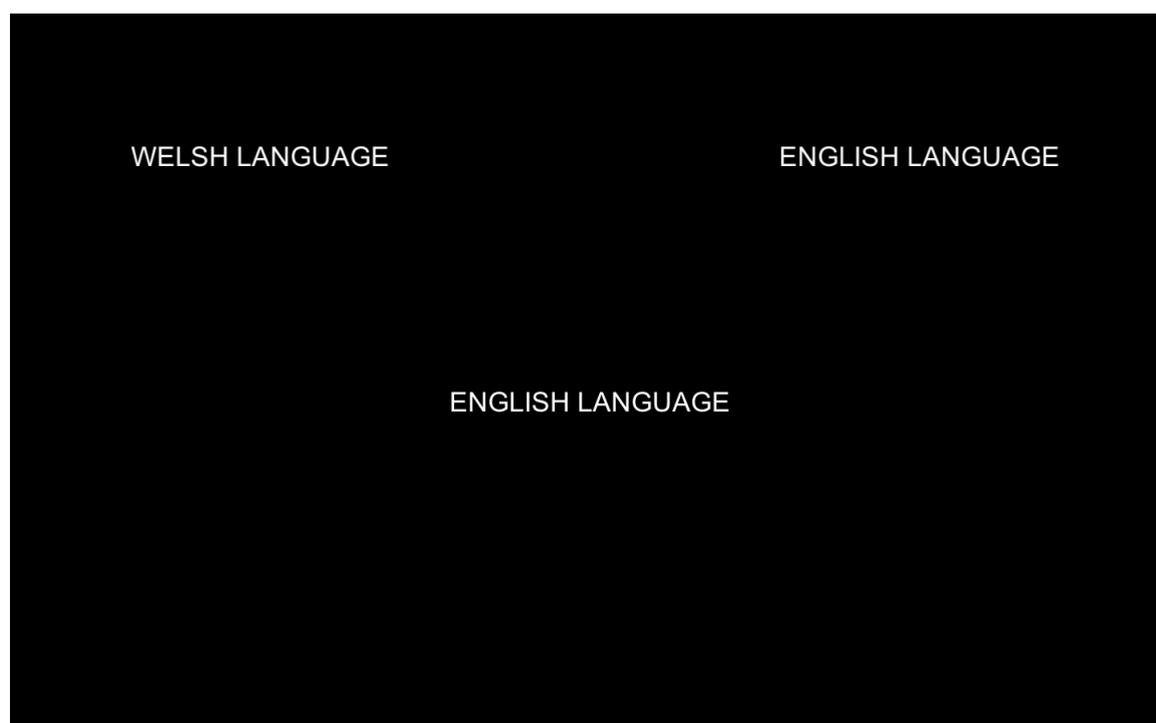


Figure 1: IAT Block 1

¹¹ In Greenwald et al.’s (2003) original methodology, ‘practice’ blocks 3 and 6 were not calculated in the *D* score. This was revised, however, in Nosek et al. (2007). It is now standard practice to include these blocks in the calculation.

¹² Traditionally, the terms appearing in the centre during this block would be images or words that are symbolically associated with the target concepts. However, because there was no means of representing the two languages with words or images without conflating them with their associated countries (i.e., Wales and England), using identical terms was determined to be the most appropriate alternative to the conventional design.

In Block 2, the words 'POSITIVE' and 'NEGATIVE' appeared on the upper left- and right-hand corners of the screen, while adjectives representing positive and negative attributes appeared one a time in the centre, as shown in Figure 2.

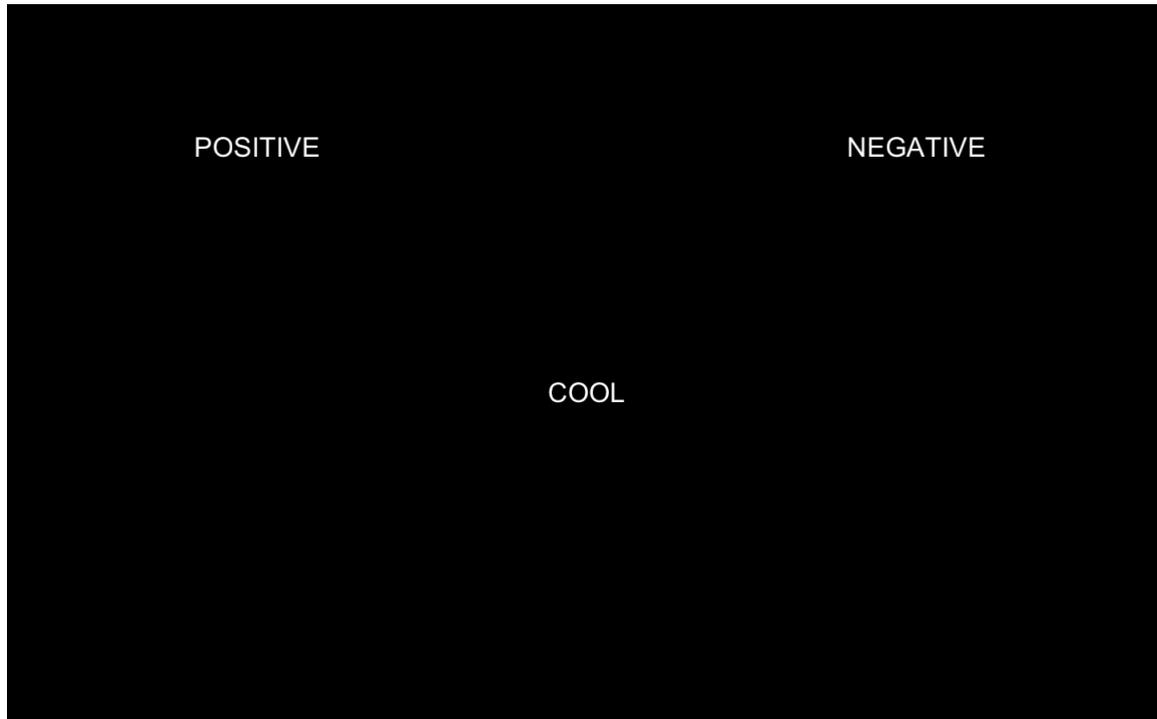


Figure 2: IAT Block 2

In Block 3, all four target concepts appeared at one time, so that 'WELSH LANGUAGE OR POSITIVE' appeared in the upper left-hand corner and 'ENGLISH LANGUAGE OR NEGATIVE' appeared in the upper right-hand corner, as shown in Figure 3. The exemplar terms 'WELSH LANGUAGE' and 'ENGLISH LANGUAGE' randomly alternated with positive and negative attributes in the centre of the screen. Block 4 was identical to Block 3, but with 40 trials rather than 20.

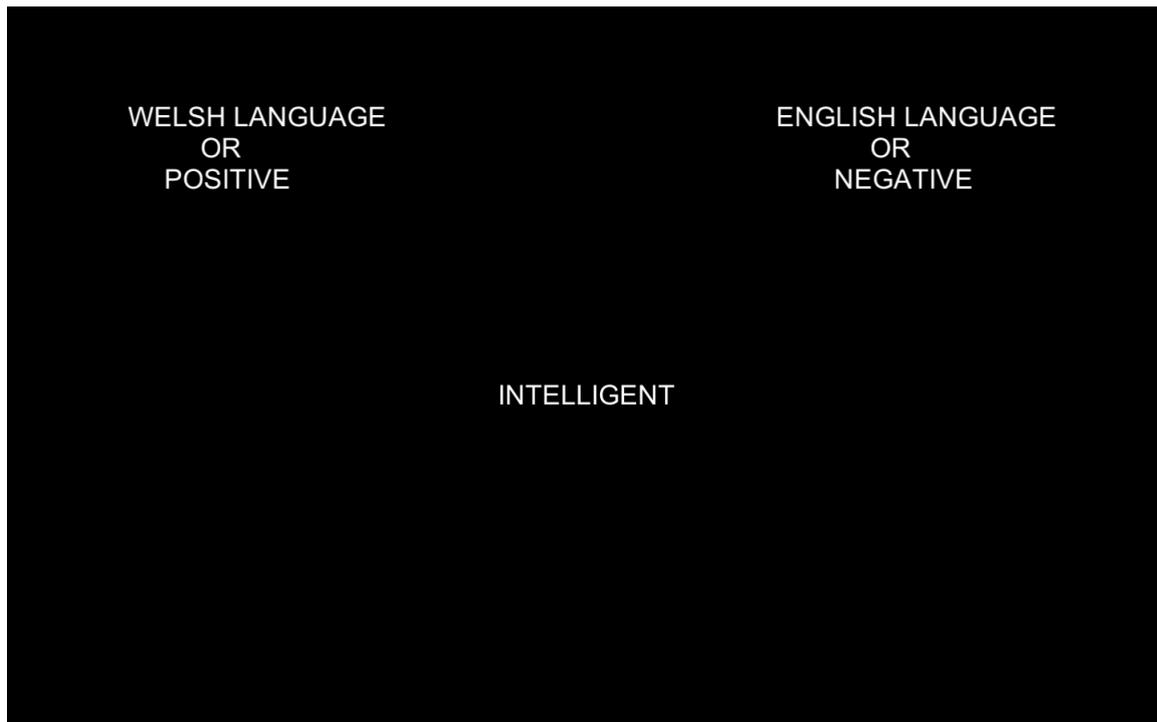


Figure 3: IAT Blocks 3 and 4

In Block 5, the side of the screen on which the target concepts ‘WELSH LANGUAGE’ and ‘ENGLISH LANGUAGE’ appeared was reversed, as shown in Figure 4. Participants practised the new configuration over the course of 20 trials.



Figure 4: IAT Block 5

In Block 6, the upper left corner now read ‘ENGLISH LANGUAGE OR POSITIVE’ and the upper right ‘WELSH LANGUAGE OR NEGATIVE’, as shown in Figure 5. Again, the exemplar terms ‘WELSH LANGUAGE’ and ‘ENGLISH LANGUAGE’ alternated randomly with positive and

negative attributes in the centre of the screen. Block 7 was identical to Block 6, only with 40 trials instead of 20. The entire test took about seven minutes to complete.

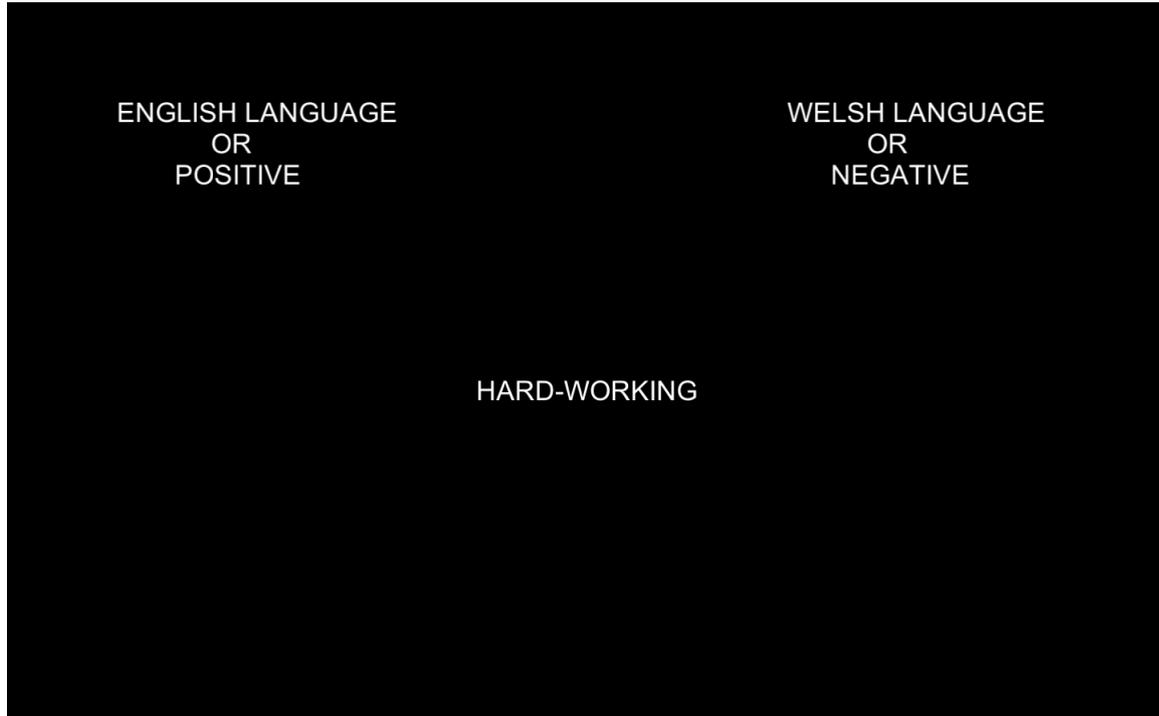


Figure 5: IAT Blocks 6 and 7

Figure 6 shows the full content and structure of the IAT, organised by trial block.

BLOCK	TARGET CONCEPTS (L-R)	STIMULI (RANDOMISED)	NUMBER OF TRIALS
1	WELSH LANGUAGE/ENGLISH LANGUAGE	WELSH LANGUAGE/ENGLISH LANGUAGE	20
2	POSITIVE/NEGATIVE	COOL/UNCOOL INTELLIGENT/UNINTELLIGENT USEFUL/IMPRACTICAL HARDWORKING/LAZY WEAK/STRONG	20
3	WELSH LANGUAGE / ENGLISH LANGUAGE OR / OR POSITIVE / NEGATIVE	WELSH LANGUAGE/ENGLISH LANGUAGE COOL/UNCOOL INTELLIGENT/UNINTELLIGENT USEFUL/IMPRACTICAL HARDWORKING/LAZY WEAK/STRONG	20
4	WELSH LANGUAGE / ENGLISH LANGUAGE OR / OR POSITIVE / NEGATIVE	WELSH LANGUAGE/ENGLISH LANGUAGE COOL/UNCOOL INTELLIGENT/UNINTELLIGENT USEFUL/IMPRACTICAL	40

			HARDWORKING/LAZY WEAK/STRONG	
5	ENGLISH LANGUAGE / WELSH LANGUAGE		WELSH LANGUAGE/ENGLISH LANGUAGE	20
6	ENGLISH LANGUAGE OR POSITIVE	WELSH LANGUAGE OR NEGATIVE	WELSH LANGUAGE/ENGLISH LANGUAGE COOL/UNCOOL INTELLIGENT/UNINTELLIGENT USEFUL/IMPRACTICAL HARDWORKING/LAZY WEAK/STRONG	20
7	ENGLISH LANGUAGE OR POSITIVE	WELSH LANGUAGE OR NEGATIVE	WELSH LANGUAGE/ENGLISH LANGUAGE COOL/UNCOOL INTELLIGENT/UNINTELLIGENT USEFUL/IMPRACTICAL HARDWORKING/LAZY WEAK/STRONG	40

Figure 6: IAT design, by trial block

2.8. *D* Score calculation

The strength of associations was quantified using *D* scores, which are calculated using an algorithm (for a full discussion, see Nosek et. al, 2007). Data from Blocks 3, 4, 6, and 7 were included in the calculation. Trial latencies of less than 300 milliseconds were eliminated. For trials where the first answer was incorrect, the time of the corrected keypress was used. For trials where no answer was provided within 4000ms, the average block mean was used with an added 600ms penalty.¹³ The combined means from Blocks 3 and 6 and from Blocks 6 and 7 were divided by their respective standard deviations, and the two resulting quotients were averaged. The end result is a *D* score between -2 and +2. A positive *D* measure indicates a positive implicit attitude toward a target concept, while a negative *D* score indicates a negative implicit attitude. Since *D* scores are designed to show relative association strengths the units on the association strength scale are not meaningful in themselves. However, as a frame of reference for this study I will refer to the break points of .15 (slight), .35 (moderate), and .65 (strong) delineated by Harvard's Project Implicit (Nosek et al., 2006; "Race Attitude", 2013).

3. *Hypotheses*

The hypotheses that the experiment described in this paper is testing are as follows:

¹³ Nosek et. al (2007) provide two nearly identical algorithms: one for IATs where respondents can correct their responses and one where it is not possible to make corrections. In the present IAT, respondents were instructed to correct their responses, but because of technical issues, the stimulus that followed would appear after 4000ms of nonresponse. To compensate for this, procedures from both algorithms were used for calculating means for trials with errors.

- (a) Participants who attend the Welsh-medium school will demonstrate more positive implicit associations toward the Welsh language than participants who attend the English-medium school, as measured by IAT D scores.
- (b) Participants at the Welsh-medium school whose first language is a language other than Welsh will have more positive attitudes toward the Welsh language than will participants at the English-medium school whose first language is a language other than Welsh.
- (c) Participants at the Welsh-medium school who have no Welsh-speaking parents will demonstrate more positive implicit associations toward the Welsh language than will participants at the English-medium school who have no Welsh-speaking parents.
- (d) Self-rated proficiency will be positively correlated with implicit attitude toward Welsh, as measured by IAT D score.
- (e) Those at the Welsh-medium school who choose to complete the questionnaire in Welsh will show more positive associations with the Welsh language than those who choose to complete the questionnaire in English.

4. Results

An independent-samples t-test showed that on average, participants at YGG had stronger positive associations with the Welsh language ($D = 0.302$, $SE = 0.05$) than did participants at EMS ($D = -0.195$, $SE = 0.07$). This difference was highly significant ($t(105.891) = 5.872$, $p < 0.0001$, $r = 0.50$). The mean D scores in Table 3 show that YGG pupils demonstrated a weakly positive association while EMS pupils showed a weakly negative association with the Welsh language.

School	Mean D score	N
YGG	.302	59
EMS	- .195	59

Table 3. D scores, all participants

Excluding participants whose first language was Welsh revealed a similar pattern. Participants at the YGG demonstrated more positive associations with the Welsh language ($D = 0.125$, $SE = 0.08$) than participants at the EMS ($D = -0.195$, $SE = 0.07$). The difference was highly significant ($t(82) = 2.836$, $p < 0.01$, $r = 0.30$). The strength of positive associations at YGG was attenuated by this exclusion.

School	Mean D score	N
YGG	.125	26
EMS	- .204	58

Table 4. D scores, participants with first languages other than Welsh

The same discrepancy emerged when participants with one or more parents proficient in Welsh were excluded from the analysis. Participants at the Welsh-medium school demonstrated more strongly positive associations with the Welsh language ($D = 0.144$, $SE = 0.09$) than those at the English-medium school ($D = -0.214$, $SE = 0.07$). The difference was highly significant ($t(76) = 2.904$, $p < 0.005$, $r = 0.32$). Once again, mean D scores for both schools went in opposite directions, and again the exclusion of children with Welsh-speaking parents in the home attenuated the strength of the positive association.

School	Mean D score	N
YGG	.144	23
EMS	-.214	55

Table 5. D scores, participants with no Welsh-speaking parents

A Pearson correlation showed that among participants in the Welsh-medium school, self-rated proficiency was positively correlated with D score ($r = 0.364$, p (one-tailed) < 0.01), which supported hypothesis (d). For the English-medium school, however, no such correlation was found ($r = 0.007$, p (one-tailed) $= 0.48$). This result did not support hypothesis (d).

The choice of IAT language at YGG was a significant predictor of D score; those who completed the IAT in Welsh had stronger positive associations with the Welsh language ($D = 0.452$, $SE = 0.07$) than those who completed it in English ($D = 0.206$, $SE = 0.08$). The difference was significant ($t(57) = 2.523$, $p < 0.05$, $r = 0.32$). Moreover, those who chose to complete the task in Welsh showed a moderately positive association with the Welsh language, while those who chose to complete the task in English showed a weakly positive association with Welsh.

Language	Mean D score	N
Welsh	.452	23
English	.206	36

Table 6. D scores by IAT language choice

5. Discussion

The difference between implicit associations at the two schools was substantial. The large discrepancy in D scores in Table 3 might be attributed to participants' home language, since there were no participants who spoke Welsh as a home language in the English-medium school.¹⁴ While bilinguals do not necessarily regard both of their languages with equal esteem (Baker, 2011), Welsh-English bilinguals are very likely to have come from home environments where use of the Welsh language is overtly and/or covertly encouraged. In Wales, it is quite common to have families with one Welsh-speaking and one English-speaking parent. Often in

¹⁴ Notably, only one pupil in all of the pupil population of EMS in Years 9 and 10 spoke Welsh as a first language. This pupil did not take part in the study.

these cases, the default language of the home is English, since that is regarded as the “language of inclusion” (Thomas & Gathercole, 2011:92). Thus, children who grow up speaking Welsh in the home are likely to have grown up either with two Welsh-speaking parents or caregivers, or with one Welsh-speaking parent or caregiver who is highly committed to passing the language on. In this environment, it could reasonably be assumed that children grow up with more positive associations toward the Welsh language than do those whose come from homes where Welsh is not spoken.

It might also be assumed that the difference in *D* scores is due to other influences from the home environment, as YGG had more participants with one or more Welsh-speaking parents than EMS. It might be expected that having a Welsh-speaking parent would foster more positive associations with the Welsh language, even if Welsh was not acquired as a first language in the home¹⁵. Some parents are first-language Welsh speakers themselves; others have learned Welsh as a second language to improve their employability, to communicate with their children, for personal enrichment, or to reconnect with their own Welsh identities. The linguistic identities and behaviours of parents could serve to promote positive associations with the Welsh language among their children. On the other hand, parents who choose to speak Welsh only outside the home may have little influence on their children’s attitudes, and some of those who speak Welsh as a first language but choose not to speak it to their children may do so because they hold negative attitudes of their own.

Despite the differences in their linguistic home environments, the pupils from YGG and EMS have multiple broader social contexts in common. Both groups reside in Cardiff, a metropolitan, multicultural, and multilingual city. Both come from schools with culturally and socioeconomically diverse pupil populations. English is the dominant language in which pupils at both schools communicate with their peers and interact with the media. And importantly, both groups fall within an age demographic that is characterised by self-exploration and identity formation, which is often manifested in rebellion against parental attitudes and expectations (Erikson, 1968). For example, in their large-scale questionnaire study of 12,000 10–15-year-olds in Wales, Sharp et al. (1973) found the oldest group of pupils they surveyed (14–15 years of age) to have the least positive attitudes toward the Welsh language, regardless of the school attended.¹⁶ During adolescence, linguistic values may be tested and called into question, and parental authority might lose its potency relative to that of peer influence. Given these commonalities, it is clear that the primary dividing factors of the participants in this study are family language behaviour and the type of school attended.¹⁷ If the former is controlled for, it can be determined whether the latter is a plausible influence on language attitudes.

Due to the differences in the linguistic backgrounds of the participants in the two schools, it is not possible to entirely isolate the school as a factor in comparing language attitudes. However, if first language and having a Welsh-speaking parent are eliminated as variables, the school emerges as a likely influence. Table 3 shows the comparative *D* scores of pupils at YGG and EMS, eliminating pupils who speak Welsh as a first language. As predicted, participants at YGG had more strongly positive implicit associations with Welsh than those at EMS. Moreover, *D* scores at YGG were positive, while those at EMS were negative. Given that no

¹⁵ On the questionnaire, information was gathered on whether pupils had a Welsh-speaking parent. However, no information was elicited on whether these parents communicated with their children through the medium of Welsh.

¹⁶ It should be noted that pupils from bilingual schools did have more positive attitudes than their counterparts who attended English-medium schools in all age groups. However, the apparent decline was evident among Sharp et al.’s pupils in both school types.

¹⁷ Individual social and linguistic experiences are also influential (Garrett, 2010); however, these cannot be accounted for on a group level.

participant in this analysis was a first-language Welsh speaker, it seems likely that the school environment was influential in fostering these associations.

Table 5 shows the comparison in *D* scores between the two schools when participants with one or more Welsh-speaking parents were factored out of the analysis (logically, this also eliminated all first-language Welsh speakers). Once again, there is a significant difference in *D* scores between the two schools, where YGG shows a positive implicit association with the Welsh language, and EMS a negative association. Again, this is notable, as all of the pupils in this sample came from homes where neither parent spoke Welsh. It is reasonable to assume from the data that the school plays a role in nurturing these associations.

Surprisingly, the two schools differ with respect to the correlation between self-rated proficiency and implicit attitude. While there is a significant moderate correlation between self-rated proficiency and *D* score among participants at YGG, no such pattern appears among participants at EMS. The correlation at YGG is in accordance with previous research on proficiency and language attitudes (Baker, 1992). This connection, however, has been found in both monolingual and bilingual schools, and thus a similar pattern would have been expected at EMS. The discrepancy might be attributed to the fact that in the Welsh-medium school, the Welsh language is a central focus of the school curriculum, and emphasis on performing well in Welsh is far greater than it is in the English-medium school. This increased pressure may have a strong attitudinal effect on learners at YGG. It could also be the case that YGG and EMS pupils based their proficiency evaluations on different criteria. The emphasis on Welsh language competence at YGG may have led YGG pupils to overestimate their proficiency or align it with their attitudes on the questionnaire, in which case a correlation with implicit attitude would be expected. Finally, as has been suggested by Karpinski and Hilton (2001), it is possible that the IAT is indeed measuring factors other than attitude—such as environmental and cultural influences—that are not necessarily correlated with proficiency for all pupils. Further research is needed to determine whether such a correlation exists in other populations of Welsh language learners.

Remarkably, more than a third of participants at YGG chose to complete the IAT in Welsh. This was surprising for a number of reasons. First, in interviews with staff, it was frequently attested that the pupils at YGG spoke English the majority of the time in recreational spaces at school, even though they are strongly discouraged from doing so. Several teachers at the school attributed this pattern to ease of communication, especially for non-first-language Welsh speakers, to peer pressure, and in some cases to rebellion against school norms. Although the IAT was conducted in an IT lab at the school site during school hours, it was clearly stated that participants were welcome to complete the test in either language and that their data would not be shared with anyone. Additionally, these instructions were delivered in English by myself, an American English speaker. Second, about one-quarter of those who chose to complete the IAT in Welsh were first-language English speakers (and non-first-language Welsh speakers), who would presumably have been more comfortable completing the task in English. It is quite possible that the academic setting and the presence of a school administrator were major influences on language choice. Since this was a confidential individual task, however, it is also possible that given the freedom to choose a language in the absence of peer pressure, pupils freely chose to use Welsh.

Table 6 shows that those at YGG who chose to complete the IAT in Welsh had significantly more positive *D* scores than those who chose to complete it in English. The data establish a tenable link between implicit associations and behaviour. This is similar to Redinger's (2010) finding that attitudes toward Luxembourgish were most positive on the affective, instrumental, and integrative dimensions among participants who elected to complete a self-report

questionnaire in Luxembourgish. The majority of participants who completed the IAT in Welsh were first-language Welsh speakers. However, it is notable that there were several non-first-language Welsh speakers who chose to complete the IAT in Welsh as well. While the data here cannot establish a causal relationship between language choice and implicit attitude, they do suggest that those with more positive implicit associations with Welsh are more likely to use the Welsh language, at least in certain contexts. Further investigation is needed to determine to what extent this pattern extends to other types of language behaviour.

The IAT on its own is limited in what it can indicate about ideologies, and indeed about attitudes. It is a rather blunt instrument that is designed to take a snapshot of implicit associations in a specific context at a specific point in time and space. Given a different physical setting (e.g., in a recreational space outside of the school grounds or in the home), the data might look different. Language attitudes are subject to contextual influences, both in their realisations and their impact, and “could have varying shapes and effects across [...] contexts” (Garrett, 2010: 225). In addition, the IAT does not capture the multidimensionality of attitudes. Unlike the matched-guise test or a comprehensive questionnaire (both of which were used in the larger study), the IAT cannot detect which specific attributes are most strongly associated with particular languages. As mentioned previously, there is also uncertainty about whether the IAT measures personal attitudes or reflects exposure to cultural environments, if indeed the two can be separated (Uhlmann et al., 2012). Finally, it relies on dichotomies—positive versus negative, Welsh versus English—that must be prescribed by the researcher in the design of the instrument. Thus, fine-grained nuances in implicit attitudes are undetectable.

That said, the IAT is valuable for language attitude studies for a number of reasons. Its most valuable asset is its capacity to reveal psychosocial associations without the need for introspection (Nosek et al., 2007) and without running the risk of skewing data with social desirability bias (Campbell-Kibler, 2012). Balancing implicit and explicit measures is critical for examining such a complex social psychological construct as attitude. Apart from the small number of studies mentioned previously, sociolinguists who have used these types of measures in tandem have been limited to matched-guise tests and priming. The IAT provides an additional tool in the sociolinguist’s repertoire, and one that is relatively easy to implement. Since the test only takes five to seven minutes to complete, it is user-friendly and minimises experimental fatigue. Furthermore, the IAT is particularly suitable for examining ideologies in different social environments, since it assumes that social psychological constructs are ideologically formed. In this way, the IAT functions as an index to broader ideological frameworks and a jumping-off point for further attitudinal study.

6. Conclusion

This article has examined Welsh- and English-medium secondary school pupils’ implicit associations with the Welsh and English languages. The present study employs the Implicit Association Test, a social psychological instrument designed to assess indirect attitudes, for the first time in the Welsh context. By exploring how associations with the Welsh language diverge within different educational contexts, this study contributes to our understanding of the role of the school in fostering positive or negative attitudes.

The IAT data show that implicit associations with the Welsh language among pupils in the Welsh- and English-medium schools differ quite dramatically, even when accounting for the effects of first language, home language, and parental proficiency. The data indicate that non-first-language Welsh speakers at a Welsh-medium school have significantly more positive

associations with the Welsh language than their English-medium-school counterparts. While other influences may be at play, there are strong indications that the school environments factor heavily into implicit attitudes. As pupils in Wales spend roughly 40 hours per week in school, educational institutions make up a substantial portion of their social and cultural environments. Through official policies, language display, and discourse about language inside and outside of the classroom, schools communicate both overt and covert ideologies to pupils about the value and usefulness of the languages they speak. It appears that the Welsh-medium school in this study is fostering an environment that is conducive to forming positive associations with Welsh, which may go a long way in promoting Welsh language revitalisation.

While the Welsh language has stabilised demographically over the past two decades in relative terms, it is again in decline, and there are numerous indications that the language attitudes of adolescents are at the heart of the issue. In recent years, language planners in Wales have sought to address this issue by providing young people with both the language skills they need and sufficient opportunities to use those skills. Relatively little attention, however, has been paid to the broader influence of the school environment. While it has been clear for some time that Welsh-medium schools produce Welsh speakers with much higher competency levels in the language than English-medium schools, these data suggest that there may be a rather substantial ideological divide as well. With respect to preparing young Welsh language learners to carry the language forward, attitude is just as critical as proficiency, and language planners need to focus a proportional amount of effort in that direction. A better understanding of the school's role in developing positive attitudes could open up opportunities for increased Welsh language support in English-medium schools as well.

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