

# Research Notes 82

Change and continuity in language  
learning and assessment

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## Editorial

Many of our colleagues at Cambridge University Press & Assessment come from teaching backgrounds. Often, they continue their professional development by undertaking a postgraduate degree to focus on their particular area of interest. In this issue of *Research Notes*, two reports from Sarah Albrecht and Colin Williams illustrate the importance of both change and continuity in successful language teaching and learning.

Sarah Albrecht, drawing on her Masters' dissertation, examines the sudden, unplanned changes in teachers' professional lives following the onset of the Covid-19 crisis. She uses semi-structured interviews to analyse their experiences and changing roles as they moved to online teaching. She found that the teacher and technology were experienced as completely co-dependent and identified the need for both systematic Continuous Professional Development (CPD) and a global levelling up of digital services.

Colin Williams summarises the findings of his Master's thesis – an investigation on whether word forms carry meaning. He focuses on phonesthemic *onset clusters* – groups of two or more consonant sounds which precede a vowel at the start of a word, e.g. **str-** in *strike*, *stretch* and *string*. Using the British National Corpus (BNC), he analyses how frequently particular onset clusters can be mapped to words from the same semantic field in Present Day English (PDE). He focuses on two questions: Is there a preponderance of words with the same onset cluster which relate to the same concept in Present Day English? And can native speakers identify phonesthemes in obsolete Old English and Middle English words to deduce meaning?

# What do teachers do in the age of Zoom? The Covid-19 crisis and the role of the language teacher

Sarah Albrecht, Product Insight and Ideation,  
Cambridge University Press and Assessment

## Summary

This paper is based on a Master's thesis in Digital Education submitted to Edinburgh University (UK) in 2021. The research was funded by Cambridge Assessment English. The MSc was supervised by Dr Philippa Sheail.

The Covid-19 crisis generated an unprecedented challenge for educational systems across the globe, obliging many teachers to rapidly shift from traditional classrooms to the online environment. This article describes a qualitative research project based on the resulting hypothesis that teacher roles were significantly displaced.

Previous studies in the field identified key changes in teacher roles, but few focused specifically on language education, which is uniquely complex due to the importance of non-verbal communication and social interaction for language acquisition. In contrast to previous research, this study took a socio-material approach, which sought the examination of the emerging relationships between human and material actors grounded in an understanding that humans are just one constituent part of messy phenomena.

In this study, experiences of educators of the changing role of the teacher in relation to the Covid-19 crisis were examined. The *Cambridge Assessment English MOOC: Teaching English Online* was used as a means of recruiting participants from mainstream education settings. Fourteen semi-structured interviews were carried out and included questions aimed at foregrounding digital things based on the Adams and Thompson (2016) publication *Researching a Posthuman World: Interviews*

with *Digital Objects*. The interviews were then analysed inductively following Braun and Clarke's (2006) six-step thematic analysis framework.

Participants described digital invitations in which technology positively impacted the teacher's role, with successful socio-material entanglements interpreted as drawing on the combined strengths of the human and material. Certain positive experiences were noted to do 'double duty' by combining a focus on the facilitation of interaction with socio-affective presences, often involving the effective use of multimedia and *multimodality*. A need for more systematic Continuous Professional Development (CPD) was noted as well as an urgency for a global levelling up of digital services. Finally, the study demonstrated that the teacher and technology were experienced as completely co-dependent, pointing to a need to revise the perception of teacher roles as independent from technology.

Findings from this study may support learning and assessment providers in improving digital education provision for educators, thus enabling teachers to find new ways to harness the potential of online teaching, and reducing anxiety surrounding this learning environment and the role of the teacher within it.

## Introduction

By April 1 2020, more than 1.5 billion learners across 165 countries were affected by Covid-19 school closures (UNSECO 2020). The unprecedented educational crisis obliged significant numbers of teachers, with minimal warning and little or no online teacher training, to rapidly shift their teaching to the online environment (Carrillo and Flores 2020). This sudden redirection, arguably, no longer allowed teachers the choice 'either to embrace the new media enthusiastically or stand aside watching its inevitable unfolding' (Clegg, Hudson and Steel 2003:39) – a phenomenon observed by Clegg et al in relation to earlier phases of digital education. Indeed, according to Comas-Quinn (2011), while many factors affect successful online language learning, success is strongly linked to the ease with which teachers transition to the complex teacher roles associated with this environment. As such, the Covid-19 crisis provided an unparalleled opportunity for research into teachers' experiences of their roles.

## Focus of the study

Even before the Covid-19 crisis, Zheng, Lin and Hsu (2018), drawing on data from Zandberg and Lewis (2008) and Watson, Pape, Murin, Gemin and Vashaw (2015), reported ever-increasing numbers of US K-12<sup>1</sup> students participating in online language courses, yet research indicated lower student satisfaction in these courses than other subjects (Oliver, Kellogg and Patel 2012). Despite the overt challenges of teaching a language online, including constraints in terms of body language and social interaction (Jabeen and Thomas 2015, Lin and Warschauer 2015, Lin and Zheng 2015), most research into teacher roles in online education does not

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1 US publically-supported schools from kindergarten (K) to 12th grade (12).

relate to language education. Similarly, online language education from K-12 has been recognised as both under-theorised and under-researched, with teacher-level factors largely ignored (Lin and Zheng 2015). As a result, this study focuses specifically on English as a Second Language (ESL) teachers working in mainstream secondary and tertiary education, arguably a particularly interesting context given that class sizes tend to be larger and student abilities more mixed than in Private Language Schools (PLS).

In 2002, Coppola, Hiltz and Rotter (2002) proposed a conceptual framework based on research into teachers' perceptions of the changes deemed necessary for shifting to an online asynchronous environment. Despite the importance of their study to later work, their conceptual framework did not fully account for technology, solely considering the human's enactment on, or agency over, the technology (Knox 2014). This research study, therefore, attempts to move beyond this perspective by taking a socio-material approach, aiming to 'destabilise the widespread account of technology as stable singular tools separate from and under the control of human beings' (Sørensen 2009:32). A socio-material perspective contends that it is in the relationships across the human and the material that the ability to do things arises: '[a]ll things – human and non-human, hybrids and parts, knowledge and systems – emerge as effects of connections and activity' (Fenwick, Edwards and Shawchuk 2011:3).

Given the present study focuses on language education, it is important to acknowledge the well-respected Communicative Approach (CA) to language teaching with its focus on fostering 'communicative competence' in students (Hymes 1972): 'language learning may be seen as a process which grows out of the interaction between learners, teachers, texts and activities' (Breen and Candlin 1980, cited in Kim 2015:2). The teacher's role is described as twofold, being that of a 'facilitator of communication' and an 'independent participant' with the focus on facilitating student interactivity and acting as a knowledgeable peer. According to Breen and Candlin (1980), the double role presupposes secondary roles such as organiser of resources, guider of activities, monitor, feedback provider, researcher, and learner and co-participant (Breen and Candlin 1980).

In 2003, Stephen Bax extended the CA through proposing the Context Approach, in which educators carefully select methodology based on a prior analysis of students' individual needs, classroom, and local and national cultures (Bax 2003:287). While context is generally understood to be critical for effective language teaching, Fenwick (2015) warned that 'to treat context as an abstract container is to miss the turmoil of relationships among these myriad non-human as well as human elements that shape, moment to moment, particular dynamics in context' (Fenwick 2015:83). Indeed, the Covid-19 crisis, which constitutes a complex entanglement of many actors (nature, humans, media, politics and technology) is perhaps a fitting exemplification of sociomaterialism, demonstrating how humans are only one constituent part of messy phenomena in constant flux. So, while acknowledging the widespread adoption of the Communicative and Context Approaches that provide steadfast pedagogical frameworks for language education, the socio-material perspective adopted in this study aims to allow for teachers' experiences to emerge in relation to the socio-material entanglements they experience.

## Participant profiles and methods

With this socio-material stance in mind, the following research question was formulated: *What are teachers' experiences of the changing role of the teacher during the Covid-19 school closure crisis?*

The first stage of the research involved recruiting participants from a broad spectrum of countries and teaching situations through targeting educators undertaking the *Cambridge Assessment English MOOC: Teaching English Online*. Purposeful criterion sampling was used to source 14 in-service ESL teachers who were proficient users of English and who were forced to shift their teaching online as a direct result of Covid-19. They were sourced from secondary schools (7), universities (5) and further education colleges (2) in: Argentina (2), Iraq (1), Italy (1), Mexico (1), Oman (1), Romania (1), Russia (1), Peru (1), Spain (2) and the UK (3), included four L1 English speakers, and eleven female and three male participants. Teaching platforms included *Zoom, Teams, Campus, Google Meet, Google Classroom, Telegram* and *WhatsApp*. Participants ranged in their experience of working with technology and one described prior experience teaching online in a different context. All data relating to the participants was anonymised and treated as confidential, so participants in this report have been given pseudonyms (Patton 2014).

Semi-structured interviews were carefully designed both 'to journey into another's perspective' (Arthur, Waring, Coe and Hedges 2012:171) and to make online teaching the subject of the inquiry. This was attempted by employing two heuristic techniques taken from the Adams and Thompson (2016) publication *Researching a Posthuman World: Interviews with Digital Objects*, described as 'specific tricks' to invite non-human things to speak to us (Latour 2005:79). The two heuristics were 'gathering anecdotes' (2016:24) and 'listening for the invitational quality of things' (2016:40), and an additional heuristic of 'studying breakdowns, accidents and anomalies' (2016:49) was included when suitable. According to van Manen (2014:250), 'the "anecdote" lets one grasp meaning experientially', detailing what occurred and not why it occurred, aiming to describe and show rather than argue or explain. Despite attempts to foreground online teaching, the interview question relating to anecdotes about good/bad online lessons did not always foreground the technology, and some participants interpreted the question to focus solely on their teaching methodology. The second heuristic, 'listening for the invitational quality of things', was selected to focus on the positive and negative agency of technology in influencing teacher roles, with questions on what technology invited/prevented and encouraged/discouraged them from doing. These questions appeared more fruitful, with participants describing how the technology provided opportunities to work in new ways.

A step-by-step process was employed as well as an interview guide, which listed and grouped themes for exploration with the aim of providing focus for the interviewer (Patton 2014). I was also aware of the potential weakness of the 'interviewer effect' (Denscombe 2017), in which participants' responses are affected by both their perception of the interviewer and the requirements of the situation. To mitigate this, the research purpose and topics were shared before and at the start of the interview. As a researcher, I was aware of my unconscious bias affecting

the credibility of my interpretations, so ‘member checking’ was employed to check participant interpretations during and post-interview.

The final stage involved in-depth data analysis. Firstly, the digital transcriptions automatically produced by voice recording software were carefully checked, allowing for early data analysis and the emergence of initial thoughts and interpretations. Thematic analysis using Braun and Clarke’s (2006) six-step framework was adopted to analyse interviews inductively and extract themes to illustrate key findings, portraying the relationships across the social and material. Main themes and sub-themes emerged inductively, sometimes linking tangibly to the interview questions and therefore to the Adams and Thompson (2016) heuristics. Other themes related the traditional roles of the language teacher that were in my mind when analysing the data, as well as teacher feelings and types of technology. Reviewing these themes allowed for common threads to be drawn out which then merged, and the active process of writing and reflecting allowed for more connections to be deciphered and interpreted.

## Findings, discussion and implications

### Constraints

The first theme, ‘constraints’, aims to explain some of the limitations experienced by participants given that they directly impacted the scope of teaching experiences.

*All of a sudden they removed the group from me and put them in these small windows. (Inga, Russia)*

Participants generally felt underprepared for online teaching and were disproportionately affected by the unfolding medical emergency. Most notably, participants were heavily constrained by digital inequality. According to van Dijk (2020), the digital divide stretches beyond a lack of digital access but is magnified where there is also a shortage of technological knowledge and skills, and according to Robinson (2009), a propensity to adopt an instrumental approach to using computers, which might involve presenting existing materials rather than engaging students in deeper learning through technology. In this study, teachers in lower- and middle-income countries and institutions were greatly impacted by digital inequality, being limited to teaching via *WhatsApp* or *Telegram* with no possibility for audio/video-conference-enabled classes.

*We use basically text messages, and uploading videos and pictures, because they don’t have the technology or a good Wi Fi to sign up with a better platform. (Rosa, Argentina)*

Rosa described a typical lesson which started with a text message to say ‘good morning’, and included sending a video to explain a grammar point and requesting students copy out a task, provided by text message, onto paper to complete. She then requested students answered questions via the chat function and provided feedback using typing, symbols and emojis. Photos were used instead of uploading documents, and voice recordings used for listening and pronunciation exercises.

Teaching via *WhatsApp* was described as accessible to the largest number of students possible, being both familiar and authentic, and while Rosa reported numerous students not engaging in the lessons, she was thankful to be able to continue providing education.

Even participants working in higher-income institutions experienced unequal digital access, as well as technical problems, with many participants reporting a lack of digital confidence particularly at the outset of the crisis. Despite enrolling on the gratis *Cambridge Assessment English MOOC: Teaching English Online*, none of the participants described having received more formal training in teaching online, and many noted how the unpredictability of technical issues and user errors continued to negatively impact their teaching some 11 months after the first lockdown in Spring 2020.

*If something goes wrong, it goes very, very wrong; we're depending on the technology to work, the lessons are unsavable if it doesn't. (Steph, UK)*

Some participants noted the learning environment itself as a constraint, which became a key concern when considering teaching options, for example noisy siblings and pets were sometimes present during lessons. Finally, many teachers described restrictions imposed by institutions and administrations in response to the pandemic, such as a reduction in weekly English classes, large class sizes, no camera policies or removal of official student grading. A requirement to continue preparing for standardised tests (such as IELTS) placed notable pressure on one teacher. Indeed, assessment was noted by some teachers as the most challenging aspect of their job when teaching online.

## Digital invitations

Across the data, an overarching critical theme of digital invitations emerged, highlighting the ways in which teachers were positively influenced by entanglements with technology to alter their teaching roles. Crucially, however, not all digital invitations were universally perceived as positive. These digital invitations will now be explored in relation to five other key themes which emerged: preparedness, shifted communication, facilitating interaction, monitoring, and socio-affective presence.

### Preparedness

The 'preparedness' theme encompasses the role of preparing for and organising lessons and has been divided into four sub-themes: planning, professional development, preparing to mitigate technical difficulties/user errors, and organisation. Participants in this study noted these roles as more involved, especially at the start of the school lockdown period, and they often described a steep augmentation in workload because of this. Indeed, US research from 2012 found more than half of American public institutions reported the additional time and effort required to teach online compared to teaching corresponding face-to-face courses (Allen and Seaman 2012).

Firstly, participants reported less improvisation and more systematic lesson planning, and for some this was experienced as an invitation to return to the fundamentals of lesson planning. More systematic planning was described as dividing lesson stages into sub-stages, and thinking more carefully about questioning, checking for understanding, and leading students in meaning making. This finding aligned with Coppola et al (2002) who referred to teachers becoming more involved in facilitating the cognitive process through targeted, deliberate questions to help students think and make meaning.

*You need to think how you're going to ask something, how you're going to make them think. I need to divide all the different steps very carefully to make sure that they will understand. (Rosa, Argentina)*

*It's difficult online to create a lesson out of nowhere. (Valentina, Italy)*

Similarly, for many participants teaching online provided a positive invitation in terms of professional development, and participants reported attending more webinars and searching for new resources and methodologies online to help prepare lessons.

However, although participants noted being invited to spend extra time learning how to use digital resources and planning digital interactions carefully to mitigate user error, many experienced what Ross and Collier described as the 'tensions between the complexities of online teaching and learning and the rigidity of the technologies and environments they must use to teach' (2016:20). Examples included students finding themselves in a breakout room without their peers; on-screen annotations being transferred automatically from one screen to the next; and being unable to share screens across multiple breakout rooms. Helen (UK) described wanting to teach her students to highlight key words in texts as part of an IELTS reading preparation class and noted the activity was less successful because she hadn't planned exactly how the highlighting would happen.

*The lessons that don't go well are because you're still trying to use the materials you've been using in the classroom, and you haven't really thought through how these are going to work online. (Helen, UK)*

Finally, various participants noted being invited by technology to organise teaching/ learning materials differently, experiencing a shift in the teacher's organisational role from being mainly the teacher's responsibility to becoming more distributed across the different actors (e.g. digital tools, physical materials, students, parents etc.).

Entanglements with technology which built on the strengths of digital tools were most favourably regarded, such as using virtual learning environments like Google Classroom, which were reported to increase transparency, immediacy and accuracy and save the teacher time through helping organise materials and enabling their easy retrieval, as well as supporting with the delivery and submission of student tasks.

*I used to have like a folder full of their essays and everything was everywhere, and since I've been working with Google Classroom, I have everything in one place. I am learning to be more organized thanks to those tools. (Elena, Mexico)*

In terms of the implications for language education, there is perhaps a need to address the augmentation in planning and preparation for classes through ensuring ring-fenced, non-contact time is set aside. Similarly, deeper levels of more systemic CPD would better support teachers to ‘understand how to shape instructional practices in which technological, content and pedagogical knowledge are embedded’ (Voogt and McKenney 2017:70). By redefining certificated pre-service teacher training, to give the virtual environment as much importance as the face-to-face context, new teachers could complete their pre-service training empowered and equipped to teach across varied, changing learning environments.

### **Shifted communication**

All participants noted a shift in communication with their students, which for some was experienced as less effective, especially for those with younger and lower-level students. Verbal communication was noted as feeling less natural, more time consuming and as requiring a specific, learned etiquette in the online environment.

*The pace of the lesson can be a bit slower and it's not such natural communication because you have to really respect turn taking. (Kate, UK)*

Generally, communication was noted to have become more written than in the traditional classroom and included, for example, the use of the chat function instead of requesting verbal responses from students. Despite this, for some participants, a shift to more written communication implied an invitation to supply students with more individualised feedback; in fact, some participants noted students paid more attention to this feedback than the informal, transient spoken comments of the face-to-face classroom. Furthermore, several participants reported this in turn improved their own teacher reflections on students’ performances.

*I think feedback is often better because I can focus on every assignment, although it takes a lot of time. (Alexandra, Romania)*

*I had to give feedback to each of them and that was a lot of work, but I think that many students really took advantage of that because they paid more attention. (Rosa, Argentina)*

The implications of a shift to more written communication are particularly interesting given that language teachers traditionally take advantage of verbal interactions to allow students’ opportunities to practise speaking. Given this finding, more research into student and teacher interactions in the online classroom would help determine whether there is any impact on the student’s acquisition of the productive language skills of writing and speaking.

### **Facilitating interaction**

*I use breakout rooms and it's not like a lot. I try to minimize that, so I am working with whole group doing one activity that I would normally do in pairs. (Elena, Mexico)*

The lack of shared physical space associated with teaching online was noted by nearly all participants as impeding traditional communicative activities, especially those involving mingling like running dictations. Teachers of younger and lower-level

students, who tend to incorporate such activities more readily, reported being more acutely impacted. While attempts were made to bring movement into lessons, such as an activity described by Elena in which students took photos of things from their bedroom and returned to the computer to discuss them, activities of this nature were reported to be limited in scope. Helen noted how students may switch their cameras off and not engage, commenting that students were more easily managed in face-to-face movement activities.

Despite the complexities of facilitating interaction in the online environment, many participants described digital invitations to partner with multimedia, which was reported to take over much of the traditional 'knowledge giver' role, aligning with the findings of Moreno and Mayer (2007) who reported the usefulness of multimedia for fostering learning. In this study, Amir (Iraq) uploaded simple grammar explanations to *Telegram* that he had recorded using his mobile phone, and Inga used Ted Talks to provide authentic, meaningful input to familiarise students with language typically elicited in the IELTS exam. Other participants described students watching videos and playing interactive games asynchronously, allowing more in-class time for peer-peer collaboration and ironing out misunderstandings. Indeed, a shift away from 'knowledge giver' to a 'knowledge guide' was described by DiPietro (2010:336), and Lin and Zheng (2015) reported the utility of multimedia for self-study so that lesson time could be dedicated to the resolution of student problems and communicative language practice. In this study, Daniel (Argentina), whose students' standardised tests were put on hold, experienced a complete shift in his beliefs about his role as a teacher. He adopted a new 'facilitator' role, with hierarchical and generational barriers broken down. His students determined the direction of learning, choosing to focus on life skills such as university interview techniques. Indeed, a similar finding was noted by Baran, Correia and Thompson (2013), who reported a flattening of hierarchy when teaching online.

*I would totally leave out these kinds of discreet activities where you would practise something and just fill in gaps. They would do those independently at home and then we engage in more meaningful activities in class. (Daniel, Argentina)*

Finally, various participants described digital invitations focusing specifically on multimodal composition, which they noted fostered student interaction and metacognition, 'the knowledge and awareness of one's own thinking processes and strategies' (Flavell 1976, cited in Iftikhar 2015:191). *Multimodality* is understood to mean employing multiple modes to express meaning simultaneously where language itself is not the only communication mode (Early, Kendrick and Potts 2015, Kress 2010); mode is understood to mean a 'set of resources for meaning-making, including image, gaze, gesture, movement, music and sound-effect' (Kress and Jewitt 2003:1). For example, Daniel requested his students produce short communicative videos, allowing for the combining of spoken English with text, stickers, drawings, and annotations using the video recording/editing software *Flipgrid*; he reported a high level of student motivation with students engaging in self-regulation to perfect their videos and provide one another with feedback. Notably, he perceived multimodal composition as more natural for his students than in-class communication, enabling shy students to participate fully and maximising

opportunities for English communication beyond the classroom itself. Similarly, Inga described having students listen to podcasts, then recording or writing summaries to upload to *Padlet* before commenting on their peers' uploads. Indeed, Wang and Liu (2020), in their recent study on teaching presence, suggested that a high level of student knowledge construction emerged from dense collaborative interactions, and therefore discourse should be carefully designed, planned for, and promoted to ensure increased interactive opportunities. Daniel and Inga's multimodal activities were also generative, non-linear, and determined by student choice (Edwards, Ivanič and Mannion 2009). While there is an 'implicit suggestion embedded in the design of tools' which influences the actions and perceptions of the teacher and students (Carvalho and Yeoman 2018:1,128), clearly it was not the technology by itself which produced opportunities for metacognitive learning (Kozma 2001); effective instructional design was required.

In summary, despite some participants experiencing socio-material entanglements which positively impacted the facilitation of interaction, this theme appeared complex for many, with the challenges more acutely experienced by those most affected by the digital divide and those teaching lower levels and younger learners. The finding suggests an urgent need for digital levelling up, as well as more research and CPD specifically in teaching younger and lower-level learners online. Furthermore, given the importance of multimodal communication in young people's lives and its utility in facilitating language communication, CPD should also include the systematic teaching of multimodal literacy and how it can support designing and implementing interactive communicative activities. This would allow teachers the opportunity to explore entanglements with multimodality and to support fostering metacognitive skills, which are understood to be important for life-long learning and are linked to self-determination and success in second language learning (Cornford 1999, Vandergrift 2005).

### Monitoring

Many participants described how a lack of physical presence, non-verbal language and truly 'seeing' their students were key limitations to the teacher's monitoring role; for example, being unable to glance round to check facial expressions, look over a student's shoulder, attend to multiple groups simultaneously or overhear conversations. Interestingly, these limitations were described regardless of whether classes were synchronous or asynchronous, or whether cameras were used by students or not. Some participants reported that the challenges of monitoring led to a greater need to trust their students and look for evidence of learning outside breakout rooms, such as when they returned to the main room. Indeed, a couple of participants described a sense of 'hoping for the best' when students were in breakout groups. Helen, who was teaching video-enabled synchronous lessons, noted the absence of non-verbal cues:

*The quality of what you are checking, or the quantity, is much less .... Even though I can see the students on Zoom, some of the body language is lost. (Helen, UK)*

*When they start looking at each other, or when they look at you with this 'look', you immediately know that they didn't get it, but online it's difficult to see. (Elena, Mexico)*

A recent case study by Cheung (2021) focusing on an English teacher teaching online during the pandemic reported very similar findings, with the participant describing monitoring student communication as her greatest challenge.

To mitigate the perceived visibility challenges, participants described experiences which often weighted towards greater human involvement. For example, Helen called on a trainee teacher to monitor certain breakout rooms so she could concentrate on others. Mike (Oman) monitored student participation through ticking names off a physical checklist, deemed useful due to the unpredictable way student profiles shifted on the *Zoom/Teams* screen. Crucially, participants also described digital invitations, for example using automarkable digital quizzes such as Google forms, which were reported to reduce time spent marking and producing tests. Steph described digital invitations to video-record her students more often, allowing them to replay their speaking outputs multiple times and press pause when needed. She described students' self-reflections as markedly less basic when video was employed, commenting how readily available and unobtrusive the video function on *Zoom* seemed in comparison to face-to-face recordings. She also described using the polling tool *WooClap* to check for understanding, which facilitated anonymous polling among her risk-averse students. Particularly noteworthy was Marina's (Peru) description of using Google Docs to monitor students collaborative writing in real time. Marina noted the technology enabled her to view multiple students' writing simultaneously, something impossible in the face-to-face classroom:

*I think it's even better because when you're monitoring in a classroom you can see them write but you cannot actually see what they are writing. But since they are typing and I have the same document they are typing in, I can actually see what they are doing, how they think. (Marina, Peru)*

In summary, participants described the importance of socio-affective presence and trusting their students more, as well as finding new ways to monitor students through altering their monitoring role and partnering with technology. Despite this, the experiences of the participants show a mismatch between the challenges of visibility in online teaching and the crucial role of monitoring in language education. This points towards to a need for greater CPD to help teachers overcome these challenges.

### **Socio-affective presence**

Finally, the theme of 'socio-affective presence' emerged encompassing two sub-themes of 'becoming more human' and 'becoming more present'. Once again, the digital divide was starkly apparent. While university teacher Alexandra reported a greater sense of connection with students due to an increase in digital communication and a lack of strict university office hours, Amir, who was working without video or audio-conferencing, described the impossibility for connectedness with his students.

Firstly, the idea of trying to 'become more human' was mentioned, with numerous participants, reporting students requiring greater socio-emotional support due to the unfolding pandemic causing anxiety and isolation. Some teachers described needing to behave differently to show their 'more human' side and break down

hierarchical boundaries, reporting a strengthening of the teacher councillor/psychologist/friend role. Indeed, DiPietro (2010) noted the importance of positive relationships when students were in crisis. Similarly, in this study, Daniel described working with a student who was experiencing suicidal thoughts and unable to cope with the lockdown. He described how his students' emotional needs had to be fully addressed through open empathetic discussion before learning could take place.

*When students have a difficult situation at home, they go to school to forget about that. But now they are home all the time, and you need to make them feel that like they are in a different place and that they can feel confident to talk to you. (Elena, Mexico)*

Secondly, nearly all the participants noted a distinct barrier to social interaction and closeness, aligning with Corry, Ianacone and Stella (2014), who reported the critical role of building trusting relationships to overcome the physical distance between educators and their students. Participants reported varying degrees of success in methods to 'become more present' and build strong relationships. These included more one-to-one catch ups, instant group messaging chats and designing content to focus on the sharing of personal experiences. Helen described opening a Zoom meeting room for informal chats before class but found the conversation to be unnatural. Conversely, Kate experienced a notably successful class in which students took control of the screen to share happy memories through photos and videos. Inga reported how a survey of her students revealed they found collaborative activities such as commenting on one another's task submissions helped build successful peer relationships and group cohesion. Additionally, teacher attempts to become co-participants in breakout rooms were also noted to help build trust, mutual respect, collaboration, and presence:

*At the very beginning, I remember students saying, 'oh the policeman has come'. Yeah, because, they thought that I was actually checking if they were interacting with each other. (Daniel, Argentina)*

In summary, the most positive experiences appeared to involve creating a sense of presence, community and trust and 'becoming more human'. This aligned with Carrillo and Flores (2020), who posit that social and collaborative components of learning should be a starting point for all online teaching. Indeed, Krashen's Affective Filter Hypothesis (Krashen 1982) argued that language acquisition is increased when students' affective filters are low enough to allow the target language input 'in', in essence when students feel relaxed, motivated and confident to be able to take risks (Du 2009, Krashen 1982). In this study, injecting a human touch into lesson content as well as carefully designing, planning, and directing collaborative communicative activities were experienced as increasing socio-affective presence. The implications of these findings are that teachers need more preparation time built into their teaching schedules as well as support in creating online communities which allow students and teachers to gel and build trust.

## Conclusion

The study provided a small-scale investigation into teachers' experiences of the changing role of the teacher during the Covid-19 school closure crisis. The research was based on a sample of teachers who self-enrolled on the *Cambridge Assessment English MOOC: Teaching English Online* and their experiences were likely influenced by their motivation to participate in the MOOC, and in this study. Furthermore, each teacher was interviewed only once, which is unlikely to have been sufficient to fully capture experiences over the 11-month period. As a result, and given the limited scope of the research, the study should be regarded as a point of departure rather than arrival, providing a modest contribution to research. Indeed, the findings are unlikely to be generalisable to a wider population of language teachers.

Nevertheless, it has thrown up interesting insights. Across the data, an overarching theme of digital invitations emerged, highlighting the ways in which teachers were positively influenced by the agency of technology to alter their teaching roles. Indeed, the most successful socio-material entanglements were interpreted as drawing on the combined strengths of the human and material.

*Well, it invites me to be creative, I'd say ... and it helps me to teach the students better and more efficiently and faster. (Inga, Russia)*

*I discovered that I really love my job more than ever, because even if I work a lot more than before when using technology ... I try to evolve, to improve my skills and to find better ways to teach. (Valentina, Italy)*

Furthermore, positive teacher experiences often involved a role of 'doing double-duty' through addressing both socio-affective presence and facilitating interaction, and involved carefully designed, planned out and prepared collaborative interactions (aligning here with the work of Wang and Liu 2020). Such activities, which sometimes included the effective use of multimodality, were noted to help build connectedness and trust, provide communicative pathways, and were highly motivating and collaborative, empowering even the shyest students to take linguistic risks. These activities were also viewed as meaningful and relevant to the communication methods used by today's students and were often linked to improving students' metacognitive skills.

Crucially, a significant digital divide was noted beyond the disparity in teachers' knowledge and confidence working online, but also in relation to the scope of the possibilities available to participants due to a lack of digital access. This digital inequality was experienced both across country borders and within countries themselves, demonstrating an urgency for a global levelling up of digital services.

Finally, findings in this study demonstrate that the teacher and technology were experienced as completely co-dependent, pointing to a need to move beyond understanding teacher roles as independent from technology. Such a redefinition requires a shift in belief systems to one in which the digital is no longer a tool or an add-on, but central to all language education, with the digital, the teacher and other actors co-present in shifting and evolving role enactments.

## References and further reading

- Adams, C and Thompson, T L (2016) *Researching a Posthuman World: Interviews with Digital Objects*, London: Palgrave MacMillan.
- Allen, I E and Seaman, J (2012) *Conflicted: Faculty and Online Education, 2012*, Joint Project of The Babson Survey Research Group and Inside Higher Ed, available online: [files.eric.ed.gov/fulltext/ED535214.pdf](https://files.eric.ed.gov/fulltext/ED535214.pdf)
- Arthur, J, Waring, M, Coe, R and Hedges, L V (2012) *Research Methods and Methodologies in Education* (First edition), London: SAGE Publications Ltd.
- Baran, E, Correia, A-P and Thompson, A D (2013) Tracing successful online teaching in higher education: Voices of exemplary online teachers, *Teachers College Record* 115 (3), 1–41.
- Braun, V and Clarke, V (2006) Using thematic analysis in psychology, *Qualitative Research in Psychology* 3 (2), 77–101.
- Bax, S (2003) The end of CLT: A context approach to language teaching, *ELT Journal* 57 (3), 278–287.
- Breen, M P and Candlin, C N (1980) The essentials of a communicative curriculum in language teaching, *Applied Linguistics* 1 (2), 89–112.
- Carrillo, C and Flores, M A (2020) COVID-19 and teacher education: a literature review of online teaching and learning practices, *European Journal of Teacher Education* 43 (4), 466–487.
- Carvalho, L and Yeoman, P (2018) Framing learning entanglement in innovative learning spaces: Connecting theory, design and practice, *British Education Research Journal* 44, 1,120–1,137.
- Cheung, A (2021) Language teaching during a pandemic: A case study of zoom use by a secondary ESL teacher in Hong Kong, *RELC Journal* 0033688220981784.
- Clegg, S, Hudson, A and Steel, J (2003) The Emperor's New Clothes: Globalisation and e-learning in Higher Education, *British Journal of Sociology of Education* 24 (1), 39–53.
- Comas-Quinn, A (2011) Learning to teach online or learning to become an online teacher: An exploration of teachers' experiences in a blended learning course, *ReCALL* 23 (3), 218–232.
- Coppola, N W, Hiltz, S R and Rotter, N G (2002) Becoming a virtual professor: Pedagogical roles and asynchronous learning networks, *Journal of Management Information Systems* 18 (4), 169–189.
- Cornford, I R (1999) Imperatives in teaching for lifelong learning: Moving beyond rhetoric to effective educational practice, *Asia-Pacific Journal of Teacher Education* 27 (2), 107–117.
- Corry, M, Ianacone, R and Stella, J (2014) Understanding online teacher best practices: A thematic analysis to improve learning, *E-Learning and Digital Media* 11 (6), 593–607.

- Denscombe, M (2017) *The Good Research Guide: For Small-Scale Social Research Projects* (Fifth edition), London: Open University Press.
- DiPietro, M (2010) Virtual school pedagogy: The instructional practices of K-12 virtual school teachers, *Journal of Educational Computing Research* 42 (3), 327–354.
- Du, X (2009) The affective filter in second language teaching, *Asian Social Science* 5 (8), 162–165.
- Early, M, Kendrick, M and Potts, D (2015) Multimodality: Out from the margins of English language teaching, *TESOL Quarterly* 49 (3), 447–460.
- Edwards, R, Ivanič, R and Mannion, G (2009) The scrumpled geography of literacies for learning, *Discourse: Studies in the Cultural Politics of Education* 30 (4), 483–499.
- Fenwick, T (2015) Sociomateriality and learning: a critical approach, in Scott, D and Hargreaves, E (Eds) *The SAGE Handbook of Learning*, London: SAGE Publications Ltd., 83–93.
- Fenwick, T, Edwards, R and Sawchuk, P (2011) *Tracing the Sociomaterial: Emerging Approaches to Educational Research*, New York: Routledge.
- Hymes, D (1972) On communicative competence, in Pride, J B and Holmes, J (Eds) *Sociolinguistics*, Harmondsworth: Penguin, 269–285.
- Iftikhar, S (2015) The importance of metacognitive strategies to enhance reading comprehension skills of learners: A self-directed learning approach, *Journal of English Language and Literature* 2, 191–195.
- Jabeen, S S and Thomas, A J (2015) *Effectiveness of online language learning*, available online: [www.iaeng.org/publication/WCECS2015/WCECS2015\\_pp297-301.pdf](http://www.iaeng.org/publication/WCECS2015/WCECS2015_pp297-301.pdf)
- Kozma, R B (2001) Counterpoint theory of 'learning with media', in Clark, R E (Ed) *Learning from Media: Arguments, Analysis and Evidence*, Greenwich: Information Age Publishing Inc, 137–178.
- Kim, J M (2015) *Developing English communicative ability and promoting collaborative learning through project-based voice acting in holistic approach*, paper presented at the Fifth Annual Asian Conference of Language Learning, Beijing, 2015, available online: [papers.iafor.org/wp-content/uploads/papers/acll2015/ACLL2015\\_15213.pdf](http://papers.iafor.org/wp-content/uploads/papers/acll2015/ACLL2015_15213.pdf)
- Knox, J (2014) Active algorithms: Sociomaterial spaces in the e-learning and digital cultures MOOC, *Campus Virtuales* 3 (1), 42–55.
- Krashen, S T (1982) *Principles and Practice in Second Language Acquisition*, Oxford: Pergamon.
- Kress, G R (2010) *Multimodality: A Social Semiotic Approach to Contemporary Communication*, London: Routledge.
- Kress, G R and Jewitt, C (2003) Introduction, in Jewitt, C and Kress, G R (Eds) *Multimodal Literacy*, New York: Peter Lang, 1–18.

- Latour, B (2005) *Reassembling the Social: An Introduction to Actor-Network Theory*, Oxford: Oxford University Press.
- Lin, C-H and Warschauer, M (2015) Online foreign language education: What are the proficiency outcomes? *The Modern Language Journal* 99, 394–397.
- Lin, C-H and Zheng, B (2015) Teaching practices and teacher perceptions in online world language courses, *Journal of Online Learning Research* 1 (3), 275–303.
- Moreno, R and Mayer, R E (2007) Interactive multimodal learning environments, *Educational Psychology Review* 19 (3), 309–326.
- Oliver, K, Kellogg, S and Patel, R (2012) An investigation into reported differences between online foreign language instruction and other subject areas in a virtual school, *Calico Journal* 29 (2), 269–296.
- Patton, M Q (2014) *Qualitative Research & Evaluation Methods: Integrating Theory and Practice*, London: SAGE Publications Ltd.
- Robinson, L (2009) A taste for the necessary: A Bourdieuan approach to digital inequality, *Information, Communication & Society* 12 (4), 488–507.
- Ross, J and Collier, A (2016) Complexity, mess and not-yetness: teaching online with emerging technologies, in Veletsianos, G (Ed) *Emergence and Innovation in Digital Learning: Foundations and Applications*, Athabasca: Athabasca University Press, 17–33.
- Sørensen, E (2009) *The Materiality of Learning: Technology and Knowledge in Educational Practice*, Cambridge: Cambridge University Press.
- UNESCO (2020) *UNESCO rallies international organizations, civil society and private sector partners in a broad Coalition to ensure #LearningNeverStops*, available online: [en.unesco.org/news/unesco-rallies-international-organizations-civil-society-and-private-sector-partners-broad](https://en.unesco.org/news/unesco-rallies-international-organizations-civil-society-and-private-sector-partners-broad)
- Vandergrift, L (2005) Relationships among motivation orientations, metacognitive awareness and proficiency in L2 listening, *Applied Linguistics* 26, 70–89.
- van Dijk, J (2020) *Closing the digital divide: The role of digital technologies on social development, well-being of all and the approach of the Covid-19 pandemic*, available online: [www.un.org/development/desa/dspd/wp-content/uploads/sites/22/2020/07/Closing-the-Digital-Divide-by-Jan-A.G.M-van-Dijk-.pdf](https://www.un.org/development/desa/dspd/wp-content/uploads/sites/22/2020/07/Closing-the-Digital-Divide-by-Jan-A.G.M-van-Dijk-.pdf)
- van Manen, M (2014) *Phenomenology of Practice: Meaning-giving Methods in Phenomenological Research and Writing*, New York: Routledge.
- Voogt, J and McKenney, S (2017) TPACK in teacher education: Are we preparing teachers to use technology for early literacy?, *Technology, Pedagogy and Education* 26 (1), 69–83.
- Wang, Y and Liu, Q (2020) Effects of online teaching presence on students' interactions and collaborative knowledge construction, *Journal of Computer Assisted Learning* 36 (3), 370–382.

Watson, J, Pape, L, Murin, A, Gemin, B and Vashaw, L (2015) *Keeping pace with K-12 digital learning: An annual review of policy and practice*, available online: [www.kpk12.com/wp-content/uploads/Evergreen\\_KeepingPace\\_2015.pdf](http://www.kpk12.com/wp-content/uploads/Evergreen_KeepingPace_2015.pdf)

Zandberg, I and Lewis, L (2008) *Technology-Based Distance Education Courses for Public Elementary and Secondary School Students: 2002–03 and 2004–05*, Statistical Analysis Report NCES 2008-008, Washington DC: National Center for Education Statistics, available online: [files.eric.ed.gov/fulltext/ED501788.pdf](http://files.eric.ed.gov/fulltext/ED501788.pdf)

Zheng, B, Lin, C H and Hsu, Y (2018) World languages in online and blended K-12 education, in Ferdig, R E and Kennedy, K (Eds) *Handbook of Research on K-12 Online and Blended Learning* (Second edition), Pittsburgh: ETC Press, 375–383.



# From *slifor* to *Slytherin*: The relationship between word form and meaning

Colin Williams, Cambridge English Qualifications, Cambridge University Press and Assessment

## Summary

This paper is based on a Master's thesis in Applied Linguistics submitted to the University of Nottingham in 2021. The research was funded by Cambridge Assessment English. A more comprehensive version has been submitted for publication to *Word Structure* (Edinburgh University Press).

This study examines whether English consonant clusters carry intrinsic meaning in submorphemic units known as *phonesthemes* – defined by the Oxford English Dictionary as ‘a phoneme or group of phonemes having recognisable semantic associations, as a result of appearing in a number of words of similar meaning’<sup>1</sup>. Firstly, a corpus analysis of the British National Corpus (BNC) was undertaken to establish the frequency with which particular *onset clusters* – groups of two or more consonant sounds which precede a vowel at the start of a word, e.g. **str-** in *strike*, *stretch* and *string* – can be mapped to words from the same semantic field in Present Day English (PDE). This revealed a high level of sound-meaning correspondences across the vast majority of English onset clusters. Secondly, L1 speakers were asked to identify the meanings of obsolete Old English (OE) and Middle English (ME) words containing the most coherent of these onsets in a free association task and a multiple-choice task. Results show a high incidence of phonesthemic matches in the former and a statistically significant number of such matches in the latter.

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1 [www.oed.com/view/Entry/142612?redirectedFrom=phonestheme#eid](http://www.oed.com/view/Entry/142612?redirectedFrom=phonestheme#eid)

These findings suggest that English phonesthemes carry intrinsic meaning as psychologically real units of language and that the concepts embodied within them can be recognised by native speakers.

## Introduction

This study addresses two basic questions: is there a preponderance of words with the same onset cluster which relate to the same concept in PDE? And can native speakers identify phonesthemes in obsolete OE and ME words to deduce meaning? If phonesthemic onset clusters are intrinsically meaningful units of language, then it is highly likely that they are also present in older forms of English and that their semantic features are recognisable to native English speakers today. Evidence of collective associative traits with regard to particular phonesthemes should also indicate whether some phonesthemes are stronger than others.

While the quality of vowel sounds has changed dramatically as English has evolved, most PDE consonants have similar phonetic values to those of OE and ME. There is also a general recognition that sound symbolic forms are less susceptible to phonological change, because recurrent sound-meaning associations lengthen their survival and lead to the assimilation of new phonesthemic member words to their number (Waugh 1979:207). This means that if research participants associate obsolete words e.g. OE *gled* ('a burning coal') with the proposed phonestheme intrinsic to the onset **gl-** ('relating to light and vision'), the mapping of phonological form to meaning is consistent with the OE pronunciation of the cluster.

The notion that phonesthemes exist is in itself controversial. For instance, the seminal maxim of Ferdinand de Saussure states that the relationship between the signifier – the sound pattern produced in articulation of the word – and the signified – the concept which this sound pattern denotes – is arbitrary (Saussure 1916/1971:100–101). The existence of the phonestheme also contradicts the orthodox position expounded by Nida (1949) and Hockett and Hockett (1960:90) that the morpheme is the smallest meaningful unit of language. However, proponents of *phonosemantics*, such as Wallis (1653), Sapir (1929), Bloch (1947), Bolinger (1950, 1965), M W Bloomfield (1953), Marchand (1959), and Rhodes and Lawler (1981) contend that the sound pattern of the signifier carries inherent content and encapsulates the essence of the signified concept, and that the phonestheme is a meaning-carrying unit intermediate on a hierarchical scale between the phoneme and the morpheme (Abelin 1999:6). Bolinger (1950:119–120) and Rhodes and Lawler (1981:339–340) also found that the critical factors in cementing sound-meaning mappings are the convergence of word semantics based on analogy and their emerging use, rather than word etymology. One example of this is the evolution of the ME verb *fnesen* ('sneeze'), via *neeze* to *sneeze* in the 15th century. It is likely that the phonetic appropriateness of the **sn-** cluster and its associations with the nose led to *sneeze* being widely adopted and superseding the older forms.

Bolinger (1950) divides monosyllabic words into *assonances* – initial consonants and consonant clusters, and *rimes* – the vowel nucleus and final consonant(s). Many rimes carry little meaning when separated from their onsets – removing the **gl-** onset

from *glint* and *glitter* leaves *-int* and *-itter*, which are not meaningful in themselves (Bergen 2004:293) – but some rimes evoke consistent associations and can reinforce phonesthemic input attached to an onset cluster (Wescott 1987:68). While this study focuses on phonesthemic onset clusters, the influence of certain rimes in sound-meaning associations is considered in light of the research results.

Previous attempts to identify phonesthemes have focused on: a) quantifying how often sound-meaning associations occurred when words with the same onset cluster and similar meanings were grouped (Firth 1930, 1935, Householder 1946, Lawler 1990, Rhodes and Lawler 1981); b) targeting unconscious language processing through *priming studies*<sup>2</sup> to support the view that phonesthemes are psychologically real (Abelin 2012, Bergen 2004); c) examining whether research participants can associate neologisms with semantic domains identified with phonesthemes and use these forms productively (Abelin 1999, Hutchins 1998, Kwon 2016, Magnus 2000); and d) comparing sound symbolic and non-sound symbolic archaic words to ascertain the usefulness of sound symbolism for vocabulary acquisition (Parault 2006). This research combines corpus evidence of the relative phonesthemic coherence of PDE consonant clusters with a questionnaire using uncontextualised stimulus words long obsolete in PDE. It is argued that using phonesthemes from obsolete words with attested histories and meanings is a more reliable measure of sound symbolism than using nonce words<sup>3</sup> which have never, as far as we know, existed.

## Methodology – corpus study

### Word selection

The British National Corpus (BNC) was selected for the corpus study as a well-rounded, easy-to-use and comprehensive corpus. Proper nouns, nonsense words and lemmas<sup>4</sup> appearing fewer than five times in the corpus were not included in the dataset. Polysyllabic words and words from the same word family<sup>5</sup> were then removed, leaving a total of 1,639 words. Limiting the corpus study to monosyllables and extended monosyllables (i.e. monosyllables with a suffix – see Table 1) results in a more user-friendly and more accurate dataset, because additional morphemes which could obscure the essential semantic features of a given monosyllabic root word are excluded. Once the data had been processed, the number of words which corresponded to the phonestheme(s) identified with each of the 32 clusters was

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- 2 These studies exposed research participants to stimulus words (primes) and measured whether reaction times for speed of word recognition were increased when stimulus words contained target phonesthemes.
  - 3 Words coined for use ‘on one specific occasion or in one specific text or writer’s works’ (OED, *nonce-word*). In these studies, words were invented to test whether research participants could identify word meaning from words featuring the target phonesthemes.
  - 4 Words or phrases in the form that they would appear in a dictionary or word list.
  - 5 Groups of words with a common root. In testing for phonesthemic coherence only one word per family was included, so *blood* was counted but not *bloody*, *bleed* or *bleeding* or compounds like *bloodbath*, *bloodsucker* etc.

analysed, and a phonesthemic coherence level (proportion of phonesthemic words per onset cluster) calculated.

**Table 1:** List of suffixes used in the corpus analysis

Suffix	Examples
-a	plaza, stoma, trauma
-al	plural, scandal, spiral, special
-ant	blatant
-ar	grammar
-ard	blizzard
-as	fracas
-ate	frigate, private
-ee	squeegee
-el	brothel, drivel, grovel, shrivel, squirrel, travel
-en	bracken, craven, swidden
-ent	strident
-er	bladder, clever, flower, glister, grocer, proper, slaughter, spider
-ern	slattern
-ess	prowess
-et	blanket, bracket, closet, plummet, skillet, snippet, trumpet
-ey	blimey, spinney, storey, trolley
-ic	clinic, drastic, plastic, sceptic, traffic, tragic
-ice	crevice, practice
-id	frigid, splendid, stupid, stolid
-ie	floozy, prairie, stymie
-ile	fragile
-in	cretin
-ion	fraction, friction
-is	crisis, praxis, stasis
-ish	blemish, brandish, brackish, skittish, squeamish
-it	plaudit, spirit
-le	bristle, crackle, drizzle, frazzle, scramble, smuggle, struggle
-ly	grizzly, sprightly
-o	blotto, bronco, fresco, stucco, trio
-om	blossom, slalom
-on	bludgeon, flagon, klaxon, prison
-or	sponsor
-ot	spigot
-our	flavour, glamour
-ous	precious, scrumptious, specious
-ow	sparrow, swallow
-re	spectre
-some	gruesome
-ty	frowsty

<b>-ue</b>	statue
<b>-ure</b>	brochure
<b>-us</b>	crocus
<b>-y</b>	brandy, clumsy, clergy, plenty, proxy, study

Total number of monosyllables + suffix in the corpus analysis = 364

Total number of monosyllables in the corpus analysis = 1,275

Total number of lemmas in the corpus analysis = 1,639

While several of these suffixes may be the same phonetically, e.g. -al, -el, -le = /əl/; -a, -ar, -er, -or, -re = /ə(r)/, they have been listed separately to illustrate the choices made in selecting words with these suffixes for corpus analysis.

## Phonestheme selection

In a comprehensive study, Hutchins (1998) compiled a list of phonesthemes taken from 15 sources in the academic literature from 1922 (Jespersen) to 1981 (Bolinger and Sears) and formulated composite glosses to summarise the phonesthemes identified. These glosses were used as the basis for the phonesthemes listed for each onset cluster in the present corpus research, supplemented by phonesthemes identified by Rhodes and Lawler (1981) and Lawler (1990), although occasionally a reworded gloss was deemed more suitable. Each onset had one to four proposed phonesthemes into which words from the corpus dataset were categorised (see Table 2). For the few onsets without proposed phonesthemes, the most consistent sound-meaning mappings were noted to see if any significant patterns could be detected.

**Table 2:** Phonesthemes used in the corpus analysis and their sources

Cluster	Proposed phonestheme	Source
<b>bl-</b>	excess (too much)	Lawler (1990)
	colour (optical properties)	Rhodes and Lawler (1981)
	compressed fluid	Lawler (1990)
	swollen, inflated, round	Hutchins (1998)
<b>br-</b>	gender roles (male)	Lawler (1990)
	bristly things – one-dimensional connected	Lawler (1990)
	gender roles (female)	Lawler (1990)
	unpleasant noise	Marchand (1959)
<b>cl-</b>	adherence, connection	Lawler (1990), Hutchins (1998)
	impact of coming together	Lawler (1990), Hutchins (1998)
<b>cr-</b>	bent, crooked	Rhodes and Lawler (1981)
	harsh, grating or unpleasant noise	Hutchins (1998)
<b>dr-</b>	liquids	Rhodes and Lawler (1981)
	pulling along or down	Hutchins (1998)
	having a languid, listless quality	Hutchins (1998)

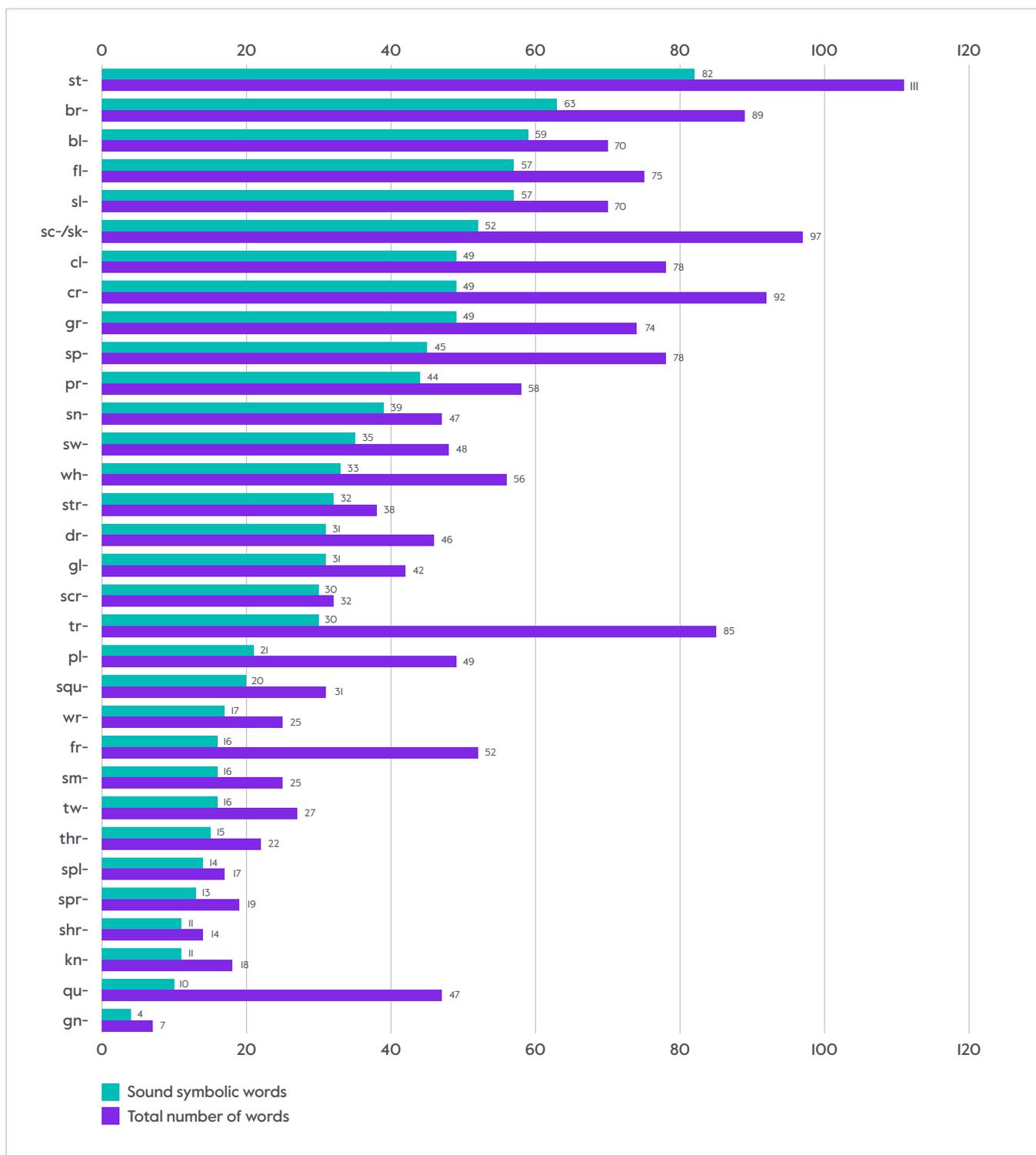
<b>fl-</b>	inconstancy, insubstantial nature*	My definition
	two-dimensional	Rhodes and Lawler (1981)
	extended, repeated, rhythmic motion	Hutchins (1998)
	lateral movement*	My definition
<b>fr-</b>	friction, fraying, wispy, insubstantial*	My definition
<b>gl-</b>	light and vision	Hutchins (1998)
	smoothness*	My definition
<b>gn-</b>	nibbling, biting*	My definition
<b>gr-</b>	negative emotion or complaint	Hutchins (1998)
	deep-toned, threatening noises	Hutchins (1998)
	growth*	My definition
	holding on tightly	Hutchins (1998)
<b>kn-</b>	three-dimensional convex	Rhodes and Lawler (1981)
	pinching and squeezing*	My definition
<b>pl-</b>	two-dimensional thick	Rhodes and Lawler (1981)
<b>pr-</b>	human social roles and behaviour	Lawler (1990)
	one-dimensional extended	Lawler (1990)
<b>qu-</b>	shake, tremble, wobble	Marchand (1960)
<b>sc-/sk-</b>	two-dimensional extended	Rhodes and Lawler (1981)
	superficial movement, surfaces, edges or thinness	Hutchins (1998)
<b>scr-</b>	scrapped and scrunched; fragments of the whole*	My definition
	extended 2D space + lateral or scrambled movement*	My definition
	unpleasant sounds, irregular movement	Hutchins (1998)
	two-dimensional extended + one-dimensional motion	Lawler (1990)
<b>shr-</b>	shrinking*	My definition
	shrieking*	My definition
<b>sl-</b>	pejorative: lazy, slovenly, careless	Hutchins (1998)
	downward movement, direction or position	Crystal (1995)
	liquid/solid interface	Lawler (1990)
<b>sm-</b>	press close, choke*	Hutchins (1998)
	belittling, insulting, pejorative*	My definition
<b>sn-</b>	nose breathing, snobbishness, inquisitiveness	Hutchins (1998)
	unpleasant	Crystal (1995)
	three-dimensional convex w/ concave (nose)	Lawler (1990)
	three-dimensional convex w/ concave (fingers)	Lawler (1990)
<b>sp-</b>	bring to a point; send out or extend from a point	Hutchins (1998)
	rush of liquid*	My definition
	cylinder	Rhodes and Lawler (1981)
<b>spl-</b>	one-dimensional to two-dimensional	Lawler (1990)
	to diverge or spread out from a point	Hutchins (1998)
<b>spr-</b>	extrusion (plant)	Lawler (1990)
	to radiate out from a point or to be elongated	Hutchins (1998)
<b>squ-</b>	compression or constriction	Rhodes and Lawler (1981)
	discordant noise*	My definition

<b>st-</b>	something firm, upright, regular or powerful	Hutchins (1998)
	one-dimensional rigid	Rhodes and Lawler (1981)
<b>str-</b>	use of muscles or forceful action in a line; something linear	Hutchins (1998)
	long, thin, stretched out	Firth (1935)
	one-dimensional non-rigid	Rhodes and Lawler (1981)
<b>sw-</b>	smooth, wide-reaching movement	Crystal (1995)
	rotary motion, curved path	Rhodes and Lawler (1981)
	oscillate, undulate, move rhythmically to and fro	Hutchins (1998)
	swagger*	My definition
<b>thr-</b>	constricted path	Rhodes and Lawler (1981)
	intense pain or emotion*	My definition
<b>tr-</b>	travel	Lawler (1990)
	a path, walk in a line	Hutchins (1998)
	locomote by foot; step forcibly	Hutchins (1998)
<b>tw-</b>	to turn, distort, entangle, or oscillate; or the result of this	Hutchins (1998)
	small sounds or small, chiefly twisting movements	Marchand (1960)
	twisting, spinning, pulling, plucking*	My definition
<b>wh-</b>	noises of air or breath or forcible movement	Marchand (1960)
	rapid movement of air or water*	My definition
<b>wr-</b>	twist, distort	Marchand (1960)
	irregular motion; or to twist, turn, or coil	Hutchins (1998)

\* Phonesthemes proposed by rewording or synthesising Hutchins's (1998) composite glosses and through analysis of the BNC data.

## Results – corpus study

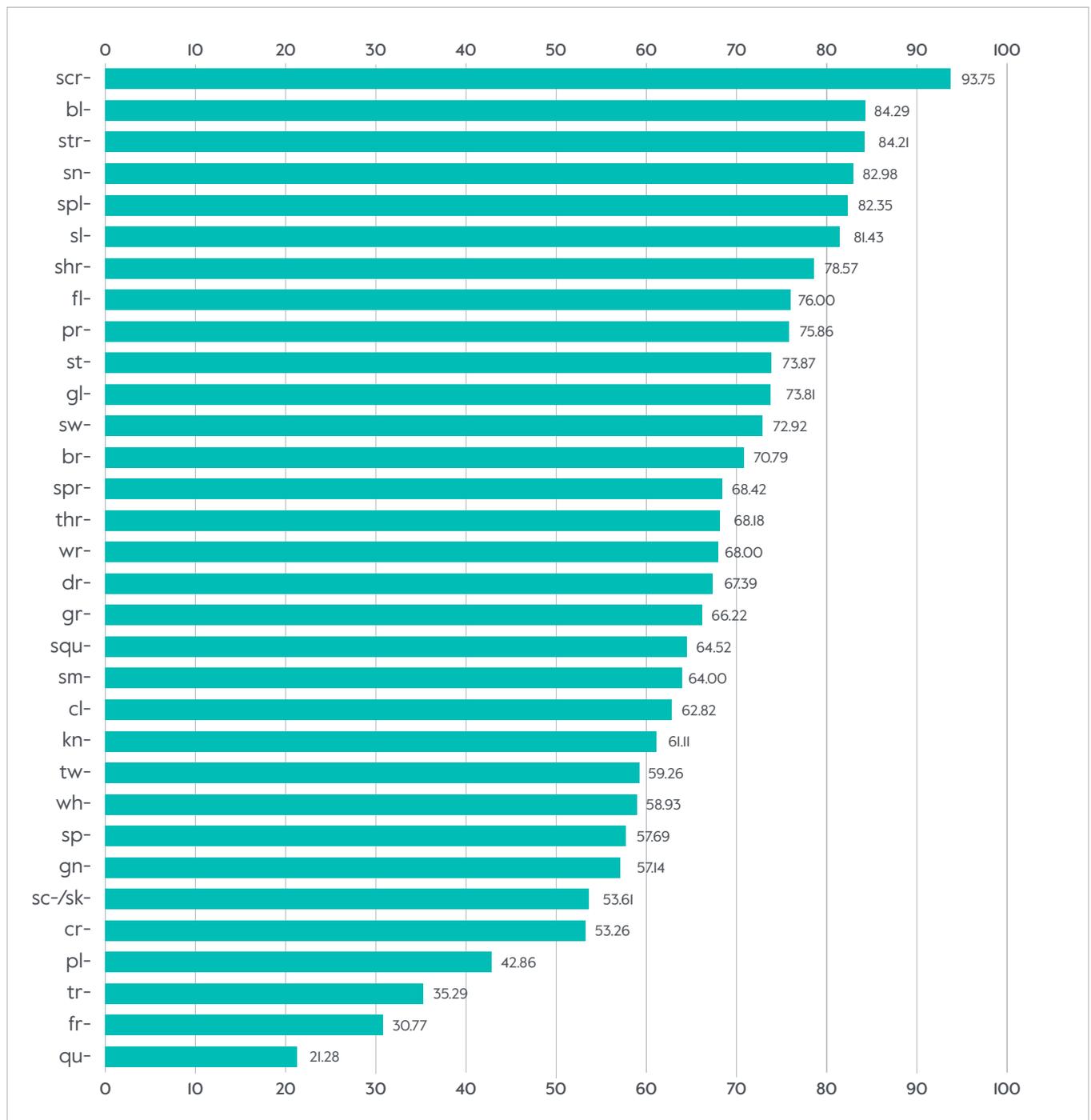
After the monosyllables and extended monosyllables (hereafter collectively referred to as *monomorphemes* for convenience) for an onset had been collated, each word was analysed to determine whether at least one of its meanings corresponded to the semantic domain of one or more of the proposed phonesthemes. If so, this word was judged to add to the phonesthemic coherence of the cluster. For words which did not seem to correspond to any phonestheme, the OED was consulted to ensure that all possible definitions for polysemous words had been considered. Results of the coherence analysis for each onset cluster are detailed in Appendix 1.



**Figure 1:** Sound symbolic monomorphemes and total number of monomorphemes per cluster

The total number of monomorphemes and sound symbolic monomorphemes per cluster is recorded in Figure 1. 1,051 of 1,639 monomorphemes fit into the phonesthemic categories associated with the onset clusters in the corpus study (64.12%). Although the most lexically frequent **st-** onset also has the highest number of sound symbolic monomorphemes, correlation analysis established that there is no statistically significant relationship between lexical frequency and the strength

of the sound-meaning association. The **bl-**, **fl-** and **sl-** onsets also contain a high number of monomorphemes and a high number of sound symbolic monomorphemes, but other lexically frequent clusters, such as **tr-** and **fr-**, have a relatively low number of sound symbolic words. In fact, many low-frequency clusters have a high proportion of monomorphemes with sound symbolic content – **spr-**, **spl-**, **shr-** and **thr-** all have phonesthemic coherence levels of 68% or more. The proportion of sound symbolic monomorphemes/total number of monomorphemes per onset cluster is outlined in Figure 2.



**Figure 2:** Level of phonesthemic coherence in monomorphemes per onset cluster (%)

While the phonesthemic coherence figure gives a broad picture of the sound symbolic properties of each cluster, it does not capture how frequently monomorphemes fall into the different semantic domains associated with each phonestheme. This information is summarised in Appendix 1. The complexity of the phonosemantics uncovered through the corpus analysis is illustrated in Table 3. Semantic glosses summarise the phonesthemes associated with each cluster, with key words given as example monomorphemes for these phonesthemes.

**Table 3:** Onset clusters and their phonesthemes with semantic glosses and key words

Onset cluster	Coherence level (%)	Semantic gloss	Key words
scr-	93.75	lateral, often irregular surface movement; unpleasant sounds; balled-up objects or torn fragments	scramble, screech, scrap
bl-	84.29	colour; or swollen, inflated or relating to excess	blood, bloat, blush
str-	84.21	use of muscles or forceful action in a line; something linear with breadth	stretch, strain, strap
sn-	82.98	to do with the nose or breathing; unpleasantness, arrogance; three-dimensional convex w/ concave (fingers)	sniff, snort, snap
spl-	82.35	to diverge or spread out from a point	split, splay, splash
sl-	81.43	downward movement, direction or position; pejorative: lazy, slovenly, careless; liquid/solid interface	slope, slump, slime
shr-	78.57	contract, get smaller; or high-pitched noise	shrink, shrivel, shriek
fl-	76.00	two-dimensional lateral orientation; extended, rhythmic often lateral movement; or inconstant, insubstantial in nature	flow, float, flag
pr-	75.86	relating to established human social roles, manners and behaviour; or long, narrow objects that stick out	proper, prim, prick
st-	73.87	something firm and upright; or fixed, regular or powerful	stand, stone, stake
gl-	73.81	relating to light or vision; smoothness	glow, glance, glide
sw-	72.92	smooth, wide-reaching movement, rocking motion to and fro; or pompous, ostentatious movements or behaviour	swing, sway, swagger
br-	70.79	bristly objects; stereotypically male or female gender roles	bristle, brute, breed
spr-	68.42	radiating outward from a point, extrusion	spray, sprout, spread
thr-	68.18	a constricted path; or intense, oppressive pain or emotion	through, throat, throb
wr-	68.00	twisting, turning, distorting	wrap, wrinkle, wrench
dr-	67.39	relating to liquids; pulling along or down, or having a languid, listless quality	drink, drag, droop
gr-	66.22	negative emotion or complaint; deep-toned, threatening noises; growth; holding on tightly	groan, grumble, grind, grip
squ-	64.52	compression, constriction; or discordant noise	squash, squeeze, squeal
sm-	64.00	press close, choke, sully; or belittling, superior, condescending	smear, smother, smug
cl-	62.82	adherence, connection; or the impact of coming together	cling, clamp, clash
kn-	61.11	round bumps or protrusions; or pinching and squeezing	knob, knot, knead
tw-	59.26	small sounds or small, chiefly turning and pulling movements	tweak, twist, twitch
wh-	58.93	noises of air, breath or water or forcible movement	whirl, whisper, wheeze
sp-	57.69	send out or extend from a point; bring to a point; gush out	spike, spurt, spit
gn-	57.14	nibbling, biting	gnaw, gnash, gnarled

<b>sc-/sk-</b>	53.61	superficial movement, often across a surface; relating to edges or thinness	skim, scan, skin
<b>cr-</b>	53.26	bent, misshapen; or harsh, jarring or unpleasant noise	crook, crouch, creak
<b>pl-</b>	42.86	flat, thick or layered two-dimensional objects	plate, plank, plaster
<b>tr-</b>	35.29	purposeful movement from A to B; a path, walking in a line; stepping forcefully	trail, track, tread
<b>fr-</b>	30.77	relating to wearing away, and wispy insubstantial objects	fray, frazzle, froth
<b>qu-</b>	21.28	shake, tremble, wobble	quake, quiver, queasy

The corpus study found that words can often be mapped to multiple phonesthemes associated with a particular onset. For example, *slip* matches all three of the **sl-** phonesthemes: ‘liquid/solid interface’, ‘pejorative: lazy, slovenly, careless’ and ‘downward movement, direction or position’. Phonesthemes associated with a particular cluster are themselves intertwined, allied to the core semantic feature through metaphorical extension: **sn-** relates to the nose and breathing but also to sneering and snootiness, and **sw-** relates to swinging movement but also the swagger of ostentation. This type of linking through metaphor echoes Lakoff and Johnson’s (1980:6) notion of how the human conceptual system is structured.

## Methodology – questionnaire

### Conceptual framework

The tasks in the questionnaire are essentially word association tasks, with participants asked to respond to obsolete stimulus words containing the onset phonesthemes. The questionnaire is divided into two parts: a free association task, and a multiple-choice task in which participants were asked to match the cue word to one of 11 semantic glosses. The two tasks were designed to reveal whether a free, more instinctive association with the cue word gives a greater ‘strike rate’ than the conscious linking of phonological and orthographical form with meaning. Response behaviour was then analysed to see whether associations were based on phonesthemes or could be attributed to some other factor.

### Onset cluster selection

The following criteria were considered when determining which onset clusters to use in the second part of the study:

- phonetic values – clusters where pronunciation has changed since the OE period have been omitted
- phonesthemic coherence – onsets below a 60% phonesthemic coherence threshold were not considered
- onsets with overlapping phonesthemes – where the sound symbolism of different clusters overlapped, the most phonesthemically coherent clusters were retained
- number of documented obsolete words – at least eight documented examples of obsolete words per cluster were required for the questionnaire

- accessibility of glosses – the categorisation of a small number of phonesthemes according to athematic metaphor<sup>6</sup> (Rhodes and Lawler 1981) was felt to be too abstract or vague for research participants, so these clusters were omitted
- independence of glosses – following a pilot study, the reference to ‘smoothness’ was removed from the **gl-** gloss, as this overlapped with a principal feature of the **sw-** onset.

This left 11 onset clusters for the second phase of the research: **bl-**, **cl-**, **fl-**, **gl-**, **scr-**, **sl-**, **sn-**, **spr-**, **st-**, **sw-** and **thr-** (see Table 4).

**Table 4:** Revised semantic glosses used in Part 2 of the questionnaire

Onset cluster	Semantic gloss
<b>sn-</b>	a) to do with the nose or breathing; arrogance, contempt
<b>gl-</b>	b) relating to light or vision
<b>bl-</b>	c) colour; or inflated, puffy; or relating to excess
<b>spr-</b>	d) radiating outward from a point, extrusion
<b>sl-</b>	e) downward movement or position; liquid/solid interface; or pejorative
<b>thr-</b>	f) a constricted path; or intense pain or emotion
<b>fl-</b>	g) two-dimensional orientation or lateral movement; inconstant, insubstantial
<b>st-</b>	h) something firm and upright; or fixed, regular or powerful
<b>scr-</b>	i) irregular surface movement; unpleasant sounds; stunted growth
<b>cl-</b>	j) adherence, connection; or the impact of collision
<b>sw-</b>	k) smooth, wide-reaching movement, rocking motion; or ostentation

Words which contained the target onsets were avoided in the final composite glosses, and every effort was made to make the glosses independent of each other, notwithstanding the fact that certain phonesthemes have features in common.

## Word selection

The obsolete words used in the study were taken from *Bosworth Toller's Anglo-Saxon Dictionary*<sup>7</sup>, the *Middle English Dictionary*<sup>8</sup>, and the *Oxford English Dictionary*<sup>9</sup>. Old English <þ> and <ð> were transliterated to <th>. Words with recognisable PDE descendants were excluded from consideration. Eight words were chosen per onset cluster (see Appendix 2) to cover the different phonesthemes corresponding to each onset, and to expose research participants to a wide range of words. The cue words were divided into four sets of 22 (I to IV), and participants were given a different set of cue words for each task in the questionnaire. Four separate questionnaires were created so each cue word could be tested in both tasks (see Appendix 3).

<sup>6</sup> Rhodes and Lawler (1981) posit that there is a classifier system whereby the set of relationships between assonance and rime indicate factors such as shape, dimensionality, physical state, shape of paths, types of motion etc.

<sup>7</sup> boswothtoller.com

<sup>8</sup> quod.lib.umich.edu/m/middle-english-dictionary/dictionary

<sup>9</sup> www.oed.com

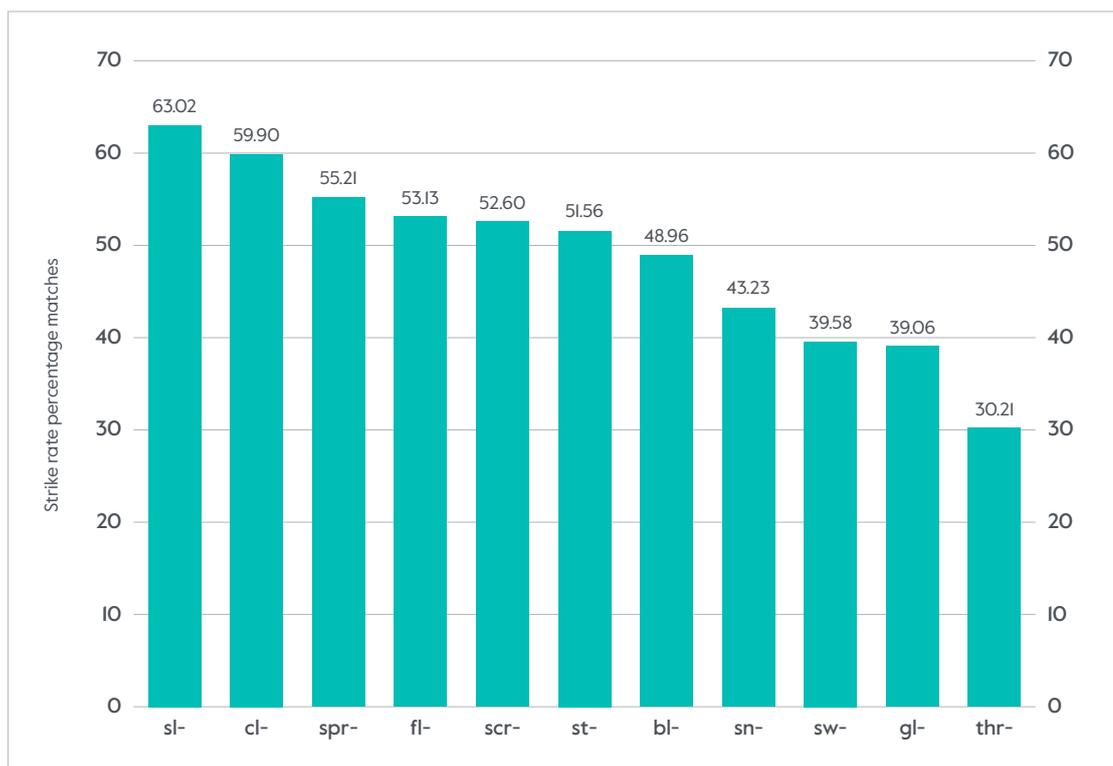
## Tasks and procedure

Research participants were shown the relevant part of the questionnaire and cue words were read out to provide an aural as well as a visual stimulus. In the Part 1 task, participants were encouraged to give reasons why they connected the cue words with particular concepts, giving a qualitative aspect to this task. In the Part 2 task, participants matched cue words to the semantic glosses identified with the phonestheme(s) proposed for each onset cluster. 96 L1 English university graduates took part in this study; 48 females, 47 males and one participant who identifies as non-binary, with ages ranging from 25 to 78. None of the participants had studied OE or ME previously.

## Results – Questionnaire

### Part I results

Responses were grouped as ‘hits’ or ‘misses’, depending on whether they corresponded to the semantic features of the phonesthemes associated with a target onset cluster. Of the 2,112 responses for the free association Part 1 task (88 words x 24 responses), there were 1,030 hits, a 48.77% strike rate (see Figure 3). Neither the phonesthemic coherence of an onset (according to the corpus analysis) nor the raw number of sound symbolic words beginning with that onset in PDE had a statistically significant bearing on the number of correct associations made by research participants, although the lexically frequent **sl-** and **fl-** onsets, with strike rates of 63.02% and 53.13% respectively, buck this general trend. The strength of **sl-** is also noteworthy in that the phonesthemes related to this cluster concern ‘pejorative terms’ and the sensory impression of ‘wetness’, concepts highlighted as being intrinsic to sound-meaning mapping in previous studies (Abelin 1999, 2012, Ramachandran and Hubbard 2001).



**Figure 3:** Phonesthetic matches per onset cluster in the Part I free association task

The uncontextualised presentation of the words in Part 1 means that neatly categorising the associations into the conventional clang, syntagmatic or paradigmatic<sup>10</sup> classifications is unviable. However, paradigmatic associations are certainly being made, as shown by the 15 associations of *thrack* ('to pack full, fill, cram') with 'hit' or 'beat'. In effect, these are paradigmatic associations at a remove: a clang association is produced because of the echoic rime *-ack*, as in 'smack', 'crack' and 'thwack', and then 'hit' or 'beat' is elicited. Morphological associations also played a part in influencing responses. When words were identified as belonging to a particular word class, there was a strong tendency for associations to be in the same syntactic category. *Clabbed* ('clustered, clumped, coagulated') was identified as a regular past participle and associated with 'hit', 'clubbed' and 'punched'; similarly, *sprent* ('a sprinkler for holy water') was seen as an irregular past participle, prompting paradigmatic associations via *spent* to 'broken', 'finished', 'tired' and 'exhausted'.

When the sound symbolic properties of rime and assonance were seen as complementary, patterns of associative response behaviour were marked. In the cue word *scrunt* ('stunted growth, tree stump'), for instance, the rime *-unt*, found in *grunt*,

<sup>10</sup> Clang associations are those based on similarity of sound rather than meaning, e.g., shop – ship, mope – rope, hat – fat; syntagmatic associations are between words that are syntactically adjacent and frequently co-occur in spoken or written language, e.g., hot – water, spend – time, hermetically – sealed; paradigmatic associations occur with words from the same word class which can be substituted for each other without affecting the grammar of the sentence, e.g., blue – red, cat – dog, end – finish.

*runt*, *cunt* etc. carries similar connotations to the scrawny and frankly unpleasant nature of the **scr-** cluster, and so was associated by 16 participants with semantic features associated with **scr-** phonesthemes. Stimulus words were often treated as blends of assonance and rime: *snur* ('to snort') is 'between a slur and a sneer', *flade* is 'a flaying blade', *blout* is 'some kind of disease: bloat and gout'. In certain cases, however, the evocativeness of the rime clearly overrode any sound-meaning mappings associated with a particular assonance – participants used 'stumble', 'bumble', 'rumble', 'jumble', 'fumble', 'grumble', 'tumble' and 'crumble' to describe *thrumble* ('to jostle, squeeze'), not to mention the close rimes 'tremble', 'ramble' and 'thimble'. These findings reinforce the view (Bolinger 1950, Lawler 2006, Rhodes and Lawler 1981, Wescott 1987) that certain rimes carry phonesthemic meaning.

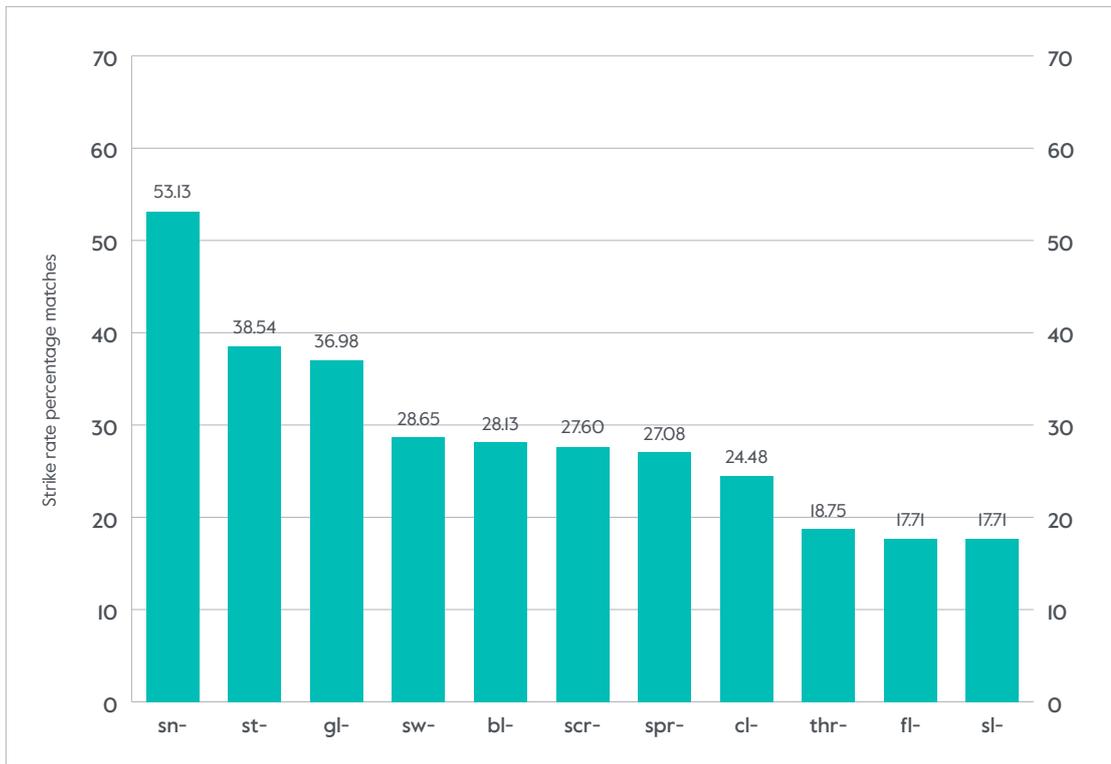
A few cue words had such strong associations with words in contemporary usage that the underlying sound symbolism attached to their onsets was overshadowed. *Sneke* ('a head cold') was associated with 'snake' and/or 'sneak' 15 out of 24 times, although different images were produced: 'to be cunning, underhand', 'move discreetly from one place to another', 'someone who isn't totally honest', 'deceptive person', etc. This even occurred when the obsolete words were associated with decidedly modern concepts, e.g., *stela* ('the stalk of a plant') with beer through 'Stella Artois™', *scruze* ('to squeeze') with 'Scrooge' and *slidor* ('a slippery, miry place') with 'Slytherin', the most sinister house in the Harry Potter series. L2 interference was also a factor: eight out of 24 people said *stofn* ('a stem, or trunk of a tree') sounded German, associating it with 'stollen', a type of fruit loaf, 'stoff' meaning 'cloth', and 'stopfen', 'to stuff'. Similarly, there was interference from French regarding the stimulus word *glise* ('to shine'), participants associating it with 'church' through 'église' and 'slide' through 'glisser' ('slip'), although the association of **gl-** with 'smoothness' may also have contributed to the latter response behaviour.

To summarise, it is difficult to quantify the extent to which matches in the free association task are activated by intrinsic sound symbolism in the stimulus words on account of the vast number of variables involved. Participants may use a word beginning with the same onset cluster to describe the associations that a stimulus word elicits due to clang associations, or what Peirce and Buchler (1955:105–107) and Waugh (1994) refer to as 'diagrammatic iconicity' in the phonestheme. Certainly, the orthographical form is important in the mapping of lexical items to semantic fields: *skrillen* ('to shriek, scream') and *scrille* ('with a high pitched, piercing sound') both enter the written record in ME (probably via Old Norse) and may even belong to the same word family. However, *skrillen* attracted only six phonesthemic matches because participants associated it with words spelt with a <k>, such as 'skillet', 'krill' and 'skill', whereas *scrille* had 22 correct matches, participants associating it with writing, through 'scribe' and 'script', and thus 'irregular surface movement'.

## Part 2 results

In Part 2 of the questionnaire, participants matched cue words to the semantic glosses shown in Table 4. Participants were asked to read all the glosses before looking at the words to mitigate any order effect (Schuman and Presser 1981). There were 612 hits from 2,112 responses, representing a 28.98% strike rate and a mean of 6.95 correct matches per word (see Figure 4). Whereas the Part 2 strike rate is much

lower than that of Part 1, the phonesthemic coherence of each cluster in the Part 2 task was much easier to quantify as responses were unambiguously hits or misses.



**Figure 4:** Phonesthemic matches per onset cluster in the Part 2 multiple-choice task

The 28.98% strike rate in the multiple-choice task is over three times higher than the chance probability of one out of 11 (9.09%) with even the least coherent clusters, **fl-**, **sl-** and **thr-**, having correct phonesthemic matches at approximately double this rate. However, this probability level is only accurate if each gloss is completely distinct from the others. As a limited number of phonesthemes have overlapping semantic features, e.g., ‘movement’ or ‘negative characteristics’, the chance probability of a phonesthemic match was raised from 9.09% to 15%. This follows Kwon (2016:87), who decided on the 15% figure for a stricter statistical testing when investigating phonesthemes in nonsense words. Table 5 shows the results of a one-sample t-test conducted to test mean response figures for statistical significance.

**Table 5:** T-test results for the percentage of phonesthemic matches per onset in Part 2 (test value = 15.00)

	<b>M</b>	<b>SD</b>	<b>d</b>	<b>t</b>	<b>Effect size<sup>a</sup></b>
<b>bl-</b>	28.13	33.10	95	3.89***	33.36
<b>cl-</b>	27.48	32.44	95	2.86**	32.70
<b>fl-</b>	17.71	29.00	95	.92	29.23
<b>gl-</b>	36.98	35.72	95	6.02***	36.01
<b>scr-</b>	27.60	35.44	95	3.48***	35.73
<b>sl-</b>	17.71	29.00	95	.92	29.23
<b>sn-</b>	53.13	35.40	95	10.56***	35.68
<b>spr-</b>	27.08	31.56	95	3.76***	31.81

<b>st-</b>	38.54	35.15	95	6.56***	35.43
<b>sw-</b>	28.65	32.23	95	4.15***	32.49
<b>thr-</b>	18.75	26.41	95	1.39	26.62

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p \leq .001$  ( $n = 96$ ).

$\alpha$  The denominator used in estimating the effect sizes. Hedges' correction uses the sample standard deviation, plus a correction factor.

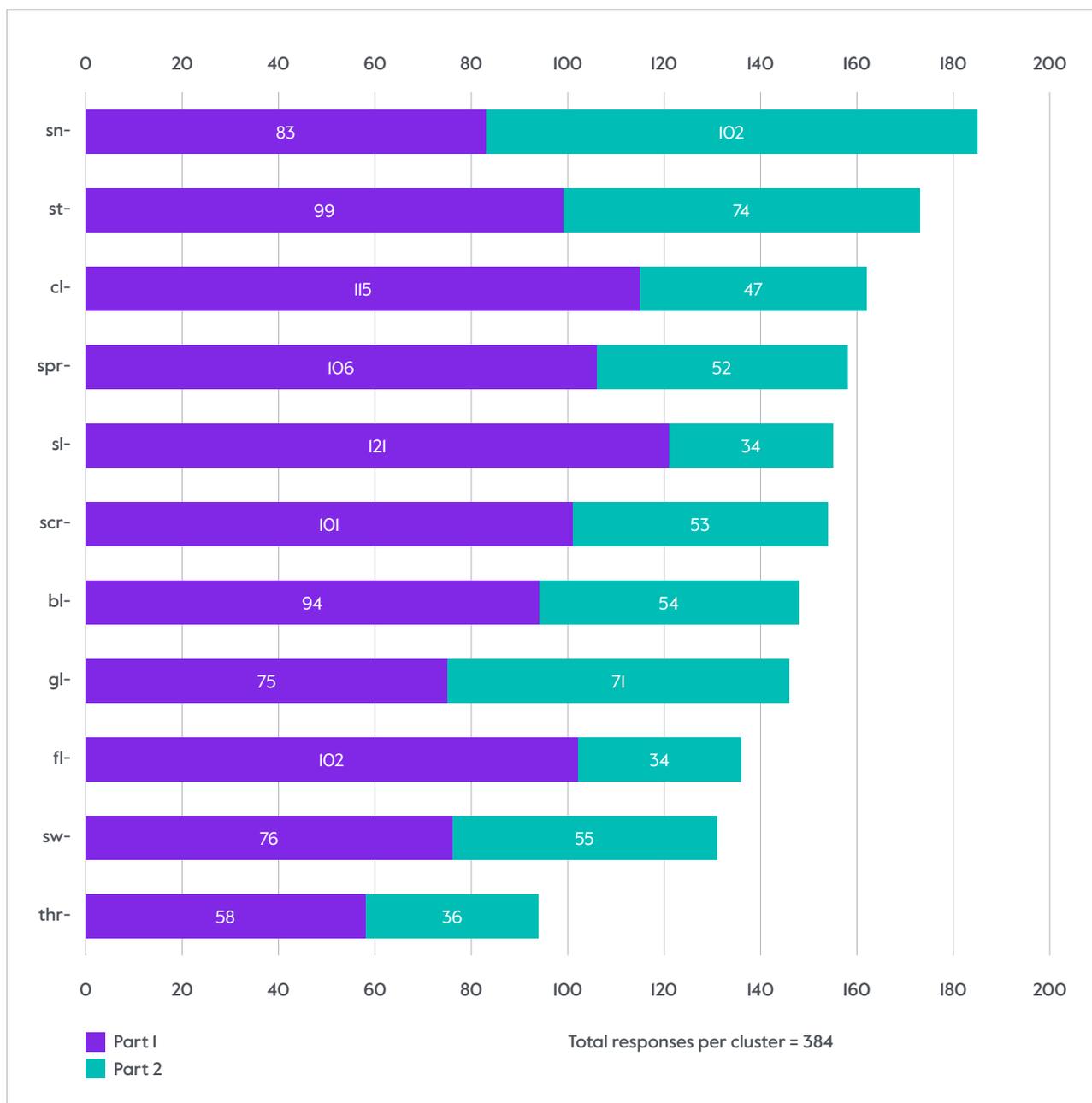
A statistically significant level of phonesthemic matches was made for eight out of the 11 groups of phonesthemic words in the Part 2 task with the probability of a match raised to 15%. **Bl-**, **gl-**, **scr-**, **sn-**, **spr-**, **st-** and **sw-** are all significant at the 0.001 level, with the **cl-** onset statistically significant at the 0.01 level. Another one-sample t-test confirmed that the mean number of Part 2 phonesthemic matches per participant is also significantly higher ( $M = 6.38$ ,  $SD = 2.74$ ) than would be predicted by chance,  $t(95) = 11.02$ ,  $p = <0.001$ . Participants had a one in 11 chance of making a correct match, i.e., two correct responses from 22 (9.09%). Even when raised to the 15% level (3.3 correct responses), 82 out of 96 participants (85.42%) made more correct matches than chance would predict, the median figure being six out of 22 correct matches.

Cue words which attracted high numbers of phonesthemic matches in both tasks often had a sound symbolic onset and were associated with PDE forms, e.g. *snurt* ('to sneer'), associated with 'snort' (36 out of 48 matches), and *stith* ('to set firmly; unyielding, strong'), associated with 'stiff', 'stitch' and 'stick' (35 out of 48 matches). Nevertheless, there is little clear pattern between the words which have the most phonesthemic matches in Part 1 and those with the most matches in Part 2. Many words attracted phonesthemic matches in one task, but not the other. *Slidor* ('a slippery, miry place') was the best performing **sl-** word in Part 1 with a 21 out of 24 strike rate, but only had two out of 24 matches on Part 2; *swimbil* ('a swaying motion') had only three out of 24 matches on Part 1, but 13 out of 24 matches on Part 2.

One possible reason for the difference between the strength of the onsets in the free association and multiple-choice tasks is that the most coherent clusters in the latter may have a narrower semantic range: **sn-** is literally and metaphorically nasal, **st-** is strong, upright and one-dimensional, and **gl-** relates to light and the eye. **Fl-** and **sl-**, by contrast, have a wider range of connotations and quite diverse phonesthemes. This might result in them being less straightforward to conceptualise, making the matching exercise more difficult.

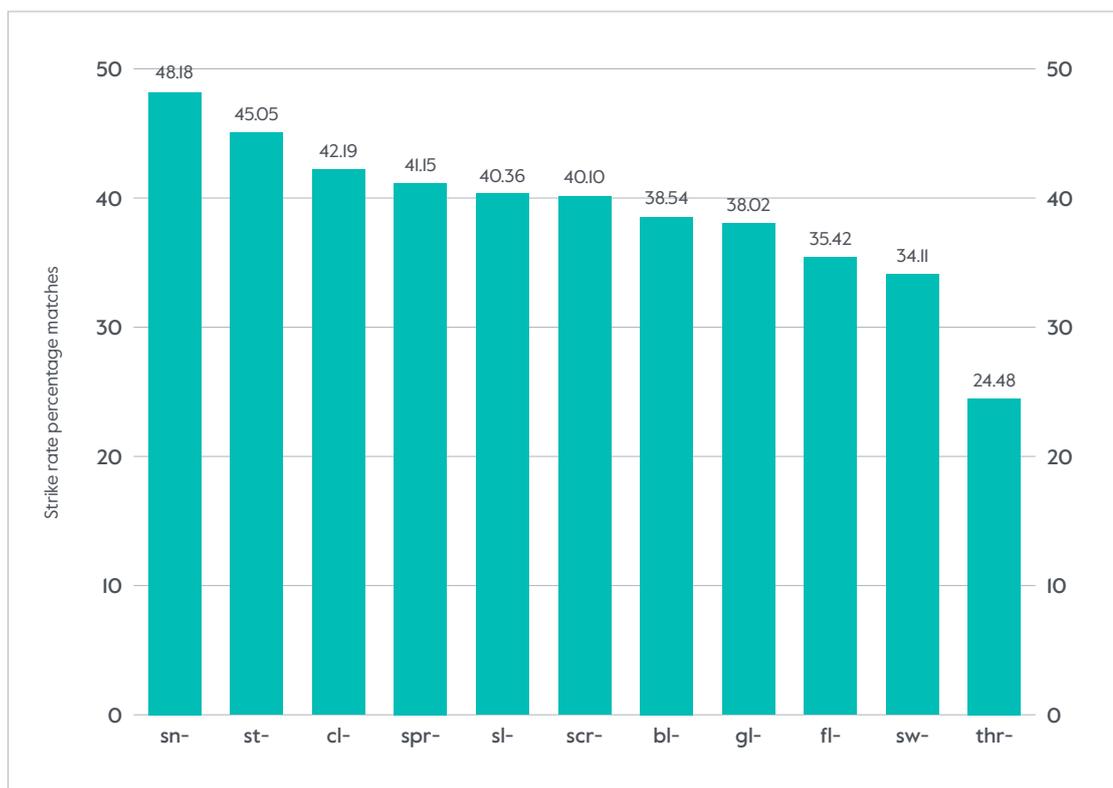
## Combined results

The mean number of correct participant responses across both tasks was 171 out of 44: 10.73 out of 22 for Part 1 and 6.38 out of 22 for Part 2, with only eight participants making a greater number of phonesthemic matches on Part 2 than on Part 1. The wide variability in response patterns indicates that there are systematic differences in the way participants react to sound symbolic cue words, and that responses cannot easily be predicted. The total number of correct responses according to onset cluster is illustrated in Figure 5.



**Figure 5:** Total number of responses corresponding to each target phonestheme ( $n = 384$ )

The level of combined phonesthemic matches for the 11 target onsets is illustrated in Figure 6, with coherence levels ranging from 48.18% for **sn-** to 24.48% for **thr-**. The mean strike rate of 38.87% (1,642 matches from a possible 4,224 responses) indicates that participants associate obsolete words with the concepts they connote at a much higher rate than if there was no link between the phonological properties of words and their meanings. However, the global figures do not reveal the full picture. **sl-**, with a strike rate of just above 40%, is a mid-ranking cluster according to the total data, yet is the highest scoring phonesthemic cluster in Part 1 and least coherent cluster in Part 2. This suggests that different factors are involved when participants are free to make associations instinctively rather than focusing on matching words to a list of glosses.



**Figure 6:** Combined level of phonesthemic matches per cluster

Even so, the global results show that participants connected the proposed phonesthemes with the concepts associated with them more than one in three times for 10 of the 11 clusters across the questionnaires. This is an impressive statistic, and seems to provide strong evidence for non-arbitrary sound-meaning mappings.

## Discussion

Both the corpus evidence and the results of the questionnaire show that phonesthemic sound-meaning relations are probabilistic rather than applicable every time a particular sound pattern is encountered. In this respect, their classification as linguistic units is problematic, as they cannot be so neatly categorised as, say, morphemes. Nonetheless, the results of both parts of the study are striking – the frequency with which English monomorphemes with biconsonantal and triconsonantal onset clusters fit into the semantic categories associated with phonesthemes and can be associated with certain concepts cannot be down to chance. These findings may run counter to the orthodox belief in the arbitrariness of the sign, but are consistent with other studies of English phonesthemes, e.g. Rhodes and Lawler (1981), Hutchins (1998), Bergen (2004).

There is some evidence that similarities in the phonemic structure of the onsets can have a bearing on the strength of associative responses. The four most lexically frequent clusters with consonant + /l/, **bl-**, **cl-**, **fl-** and **sl-**, have similar response patterns, attracting two to three times more phonesthemic hits on the Part 1 task than on the Part 2 task. For these clusters, the obsolete words often elicited associations with very common PDE monosyllables with the same onsets in Part 1: ‘blue’, ‘clap’, ‘fly’, ‘slide’, etc. This may

be indicative of conventionalised sound-meaning mappings due to the frequency of recurrent phonetic patterning in the lexicon, as suggested by M Bloomfield (1895:410) and Rhodes (1994:289). Interestingly, the two triconsonantal clusters in this study, **scr-** and **spr-**, each with the structure /s /+ voiceless obstruent + /r/, also have closely related response patterns (strike rates of 52.6% and 27.6% for **scr-** and 55.2% and 27.1% for **spr-**). However, their high numbers of phonesthemic matches on Part 1 cannot be due to frequency in the lexicon, because these clusters are lexically infrequent. As these onsets also showed highly significant numbers of phonesthemic matches on Part 2, they may be more intrinsically meaningful than some of the consonant + /l/ clusters.

While more research is needed to make definitive conclusions on response patterns like these and on exactly how phonesthemes interrelate, the impact of phonemic form is worth exploring further. Common elements in compositionality in phonesthemic structure may be responsible for overlapping themes, as Hutchins (1998) and Magnus (2000) suggest. For example, the liquid /l/ in the second phoneme position seems to connote 'smoothness' – witness how the smooth consonant + /l/ words contrast with the abrasive consonant + /r/ words in the minimal pairs *blush-brush*, *glaze-graze* and *cloak-croak*.

The phonological properties of onset clusters are unlikely to be the most decisive factor in determining phonesthemic coherence, however. **Sn-** may be mapped more easily to the meaning 'nose' because of some onomatopoeic association between the nose and the voiced alveolar nasal /n/ when **sn-** is articulated, but it would be a stretch to say that **gl-** somehow represents 'light', **st-** 'vertically-oriented solidity' or **bl-** 'colour' because of the way these phonemic combinations are pronounced. Instead, this study supports the position of Jakobson and Waugh (1979:182) and Marchand (1959:157) that certain combinations of phonemes have a natural, intrinsic value that makes them particularly suited to particular concepts within the lexicon.

To sum up, the disparate nature of the associations which participants made with the cue words in the questionnaire should strike a cautionary note when making broad conclusions about phonesthemes. Stimulus words elicited such a diverse range of responses that it seems unwise to attribute these differences solely to phonological or orthographical features integral to the words themselves. It may be that some participants are simply more attuned to sound symbolism than others. Furthermore, as participants were given time to answer each item in the questionnaire, this study does not differentiate between associations which were made instinctively as in priming studies such as Bergen (2004) and Abelin (2012) or those where participants were able to contemplate and rationalise their responses, e.g. Magnus (2000) and Parault (2006).

## Conclusion

The corpus evidence confirms that 64% of monomorphemes with biconsonantal or triconsonantal onsets correspond to previously identified phonesthemes in PDE. This indicates that there is systematic patterning in the lexicon, adding weight to Kwon's (2016:89) contention that sound symbolic consonant clusters are meaningful in and

of themselves. Although this research illustrates that different onsets have different levels of phonesthemic strength, initial consonant clusters clearly play an important role in generating associations from unknown words. Research participants were able to make sound-meaning correlations between obsolete words and the majority of phonesthemes in this study (**bl-**, **cl-**, **gl-**, **scr-**, **sn-**, **spr-**, **st-** and **sw-**) to a statistically significant level. These results confirm the psychological reality of these phonesthemes and bolster the argument that they are productive units of language – participants can create associations between unknown words and the concepts embodied in the phonesthemes, as well as recognising the meanings integral to them.

## References

- Abelin, Å (1999) *Studies in sound symbolism*, PhD dissertation, Göteborg University.
- Abelin, Å (2012) Relative frequency and semantic relations as organizing principles for the psychological reality of phonaesthemes, *Selected Papers from UK-CLA Meetings 1*, 128–145.
- Bergen, B K (2004) The psychological reality of phonaesthemes, *Language* 80 (2), 290–311.
- Bloch, B (1947) English verb inflection, *Language* 23 (4), 399–418.
- Bloomfield, M (1895) On assimilation and adaptation in congeneric classes of words, *American Journal of Philology* 16, 409–435.
- Bloomfield, M W (1953) Final root-forming morphemes, *American Speech* 28, 158–164.
- Bolinger, D L (1950) Rime, assonance and morpheme analysis, *Word* 6, 117–136.
- Bolinger, D L (1965) *Forms of English*, Cambridge: Harvard University Press.
- Bolinger, D L and Sears, D A (1981) *Aspects of Language* (Third edition), New York: Harcourt Brace Jovanovich.
- Crystal, D (1995) *The Cambridge Encyclopedia of the English Language*, Cambridge: Cambridge University Press.
- Firth, J (1930) *Speech*, London: Ernest Benn.
- Firth, J (1935) The use and distribution of certain English sounds, *English Studies* 17, 8–18.
- Hockett, C F and Hockett, C D (1960) The origin of speech, *Scientific American* 203 (3), 88–97.
- Householder, F W (1946) On the problem of sound and meaning, an English phonestheme, *Word* 2, 83–84.
- Hutchins, S S (1998) *The psychological reality, variability, and compositionality of English phonesthemes*, PhD Dissertation, Emory University.
- Jakobson, R and Waugh, L R (1979) *The Sound Shape of Language*, Brighton: Harvester Press.

- Jespersen, O (1922) *Language: Its nature, development and origin*, London: Allen and Unwin.
- Kwon, N (2016) Empirically observed iconicity levels of English phonaesthemes, *Public Journal of Semiotics* 7 (2), 73–93.
- Lakoff, G and Johnson, M (1980) *Metaphors We Live By*, Chicago: University of Chicago Press.
- Lawler, J M (1990) Women, men and bristly things: The phonosemantics of the br- assonance in English, *Michigan Working Papers in Linguistics* Winter 1990, 27–43.
- Lawler, J M (2006) The data fetishist's guide to rime coherence, *Style* 40 (1-2), 158–178.
- Magnus, M (2000) *What's in a word? Evidence for phonosemantics*, PhD dissertation, University of Trondheim.
- Marchand, H (1959) Phonetic symbolism in English word formations, *Indogermanische Forschungen* 65, 146–168.
- Marchand, H (1960) *The categories and types of present-day English word-formation: A synchronic-diachronic approach*, Wiesbaden: Otto Harrassowitz.
- Nida, E A (1949) *Morphology: The Descriptive Analysis of Words*, Ann Arbor: University of Michigan Press.
- Parault, S J (2006) Sound symbolic word learning in written context, *Contemporary Educational Psychology* 31 (2), 228–252.
- Peirce, C S and Buchler, J (1955) *Philosophical writings of Peirce*, New York: Dover.
- Ramachandran, V S and Hubbard, E M (2001) Synaesthesia – a window into perception, thought and language, *Journal of Consciousness Studies* 8 (12), 3–34.
- Rhodes, R (1994) Aural images, in Hinton, L, Nichols, J and Ohala, J (Eds) *Sound Symbolism*, Cambridge: Cambridge University Press, 276–292.
- Rhodes, R and Lawler, J (1981) Athematic metaphors, in Hendrick, R, Masek, C and Miller, M F (Eds) *Papers from the Seventeenth Regional Meeting of the Chicago Linguistic Society*, Chicago: Chicago Linguistic Society, 318–342.
- Sapir, E (1929) A study in phonetic symbolism, *Journal of Experimental Psychology* 12, 225–239.
- Saussure, F de (1916/1971) *Cours de linguistique générale*, Paris: Payot.
- Schuman, H and Presser, S (1981) *Questions and Answers in Attitude Surveys: Experiments on Question Form, Wording, and Context*, New York: Academic Press.
- Wallis, J (1653) *Grammatica linguae anglicanae*, Hamburg: Gotfried Schultzen.
- Waugh, L R (1979) On the sound shape of language, *Deseret Language and Linguistic Society Symposium* 5 (1), 198–214.
- Waugh, L R (1994) Degrees of iconicity in the lexicon, *Journal of Pragmatics* 22, 55–70.
- Wescott, R W (1987) Holiesthemes or phonesthemes twice over, *General Linguistics* 27 (2), 67–72.

## Appendix I: Coherence levels for different phonesthemes analysed in the corpus study

Cluster	Suggested phonestheme	Example words	Coherence (%)
bl-	excess (too much)	bluster, bling	78.57
	colour (optical properties)	blue, blush	42.86
	compressed fluid	blood, blister	34.29
	swollen, inflated, round	blubber, bloated	31.43
br-	gender roles M	brash, brawn	32.58
	bristly things – one-dimensional connected	brush, bristle	30.34
	gender roles F	breast, breed	25.84
	unpleasant noise	break, brawl	6.74
cl-	adherence, connection	clump, cling	62.82
	impact of coming together	clap, clash	26.92
cr-	bent, crooked	crooked, crab	33.70
	harsh, grating or unpleasant noise	crash, cry	15.22
dr-	liquids	drink, drip	39.13
	pulling along or down	drag, draw	28.26
	having a languid, listless quality	droop, drug	26.09
fl-	inconstancy, insubstantial nature	flimsy, fleece	56.00
	two-dimensional	floor, flat	52.00
	extended, repeated, rhythmic motion	fly, flap	49.33
	lateral movement	float, flow	48.00
fr-	friction, fraying, wispy, insubstantial	fray, fringe	30.77
gl-	light and vision	glow, glance	59.52
	smoothness	glide, glass	19.05
gn-	nibbling, biting	gnaw, gnash	57.14
gr-	negative emotion or complaint	grim, grumpy	51.35
	deep-toned, threatening noises	growl, grind	36.49
	growth	grow, green	9.46
	holding on tightly	grip, grasp	8.11
kn-	three-dimensional convex	knob, knee	55.56
	pinching and squeezing	knead, knock	50.00
pl-	two-dimensional thick	plank, plate	42.86
pr-	human social roles and behaviour	proper, priest	51.72
	one-dimensional extended	prong, prick	24.14
qu-	shake, tremble, wobble	quiver, quake	21.28
sc-/sk-	two-dimensional extended	skim, scorch	53.61
	superficial movement, surfaces, edges or thinness	skin, scan	52.58
scr-	scrapped and scrunched; fragments of the whole	scrap, scruffy	78.13
	extended two-dimensional space + lateral or scrambled movement	scramble, screw	68.76
	unpleasant sounds, irregular movement	scrape, scream	65.63
	two-dimensional extended + one-dimensional motion	screen, scratch	62.50
shr-	shrinking	shrink, shrivel	57.14
	shrieking	shriek, shrill	28.57

<b>sl-</b>	pejorative: lazy, slovenly, careless	slow, slouch	57.14
	downward movement, direction or position	slope, slip	45.71
	liquid/solid interface	slush, slop	34.29
<b>sm-</b>	press close, choke	smother, smoke	36.00
	belittling, insulting, pejorative	small, smear	44.00
<b>sn-</b>	nose breathing, snobbishness, inquisitiveness	sniff, sneeze	63.83
	unpleasant	snort, sneer	61.70
	three-dimensional convex w/ concave (nose)	snub, snout	51.06
	three-dimensional convex w/ concave (fingers)	snap, snip	25.53
<b>sp-</b>	bring to a point; send out or extend from a point	spike, spit	44.87
	rush of liquid	spurt, spew	30.77
	cylinder	spool, spindle	25.64
<b>spl-</b>	one-dimensional to two-dimensional	splay, split	82.35
	to diverge or spread out from a point	splash, splinter	70.59
<b>spr-</b>	extrusion (plant)	sprout, spring	68.42
	to radiate out from a point or to be elongated	spray, spread	68.42
<b>squ-</b>	compression or constriction	squeeze, squash	58.06
	discordant noise	squeal, squeak	19.36
<b>st-</b>	something firm, upright, regular or powerful	stand, steady	72.07
	one-dimensional rigid	stiff, stake	58.56
<b>str-</b>	use of muscles or forceful action in a line; something linear	strain, strike	81.58
	long, thin, stretched out	stretch, stream	60.53
	one-dimensional non-rigid	strap, string	55.26
<b>sw-</b>	smooth, wide-reaching movement	swing, sweep	68.75
	rotary motion, curved path	swoop, swirl	64.58
	oscillate, undulate, move rhythmically to and fro	sway, switch	64.58
	swagger	swagger, swish	18.75
<b>thr-</b>	constricted path	throat, through	50.00
	intense pain or emotion	throb, thrash	36.36
<b>tr-</b>	travel	travel, train	32.94
	a path, walk in a line	trail, trip	22.35
	locomote by foot; step forcibly	tread, tramp	17.65
<b>tw-</b>	to turn, distort, entangle, or oscillate; or the result of this	twist, twirl	55.56
	small sounds or small, chiefly twisting movements	twitch, tweak	51.85
	twisting, spinning, pulling, plucking	twiddle, twang	44.44
<b>wh-</b>	noises of air or breath or forcible movement	whip, whistle	58.93
	rapid movement of air or water	whoosh, whirl	50.00
<b>wr-</b>	twist, distort	wrinkle, wrestle	68.00
	irregular motion; or to twist, turn, or coil	wring, wrap	64.00

## Appendix 2: Obsolete words used in the study

Word	Definition	Source*	Word	Definition	Source
<b>bl-</b>			slifor	slippery, deceitful	BT
blat	livid, pale	BT	slike	slime, sludge	OED
bleddren	to become blistered	MED	slor	mud, slime	MED
blee	colour, complexion	OED	sloy	a derogatory term for a woman	OED
bletch	to blacken	OED	<b>sn-</b>		
blo	blackish-blue, livid, leaden-coloured	MED	snatted	(of the nose) flattened, snub	MED
blore	loud wailing; loud talking, bluster, bragging	MED	sneke	a head cold	MED
blout	soft, flabby, pliable	MED	snoach	to snuffle; to speak through the nose	OED
blyscan	to be red, shine	BT	snochinge	speaking through the nose	MED
<b>cl-</b>			snur	to snort	OED
clabbed	clustered, clumped, coagulated	MED	snurl	a head cold; a nostril	OED
cleam	smear, cause to stick	BT	snurt	to sneer	MED
cleek	to lay hold of, clutch, grasp, seize firmly	OED	snuve	sniff; snuff	OED
clibbor	adhesive, sticky	BT	<b>spr-</b>		
clodder	a clotted or curdled mass	MED	spra	to put forth branches, spring	MED
clomprish	somewhat thick or congealed	MED	spreinen	to sprinkle, scatter	MED
clunch	a lump; lumpen	MED	sprendel	a rod or stick used in thatching	MED
cluppel	a fastening, a coupling	MED	sprent	a sprinkler for holy water	MED
<b>fl-</b>			sprew	to spray	OED
flabel	a fan	OED	sprintle	a shoot, twig	MED
flade	flake of snow	MED	sprittle	a young shoot or twig	MED
flaff	to flap, flutter	OED	spronk	a shoot, sprout	BT
flathe	a skate, ray (fish)	MED	<b>st-</b>		
fleme	current of a stream; flight (flee)	MED	staddle	a foundation, fixed place	BT
flett	ground floor (of a house)	BT	stathel	to establish, found, fix, make steadfast	BT
fletting	tangled mass of hair	MED	stela	the stalk of a plant	BT
flewsa	flowing, flux	BT	stith	to set firmly; unyielding, strong	BT
<b>gl-</b>			stofn	a stem, or trunk of a tree	BT
gled	a burning coal	BT	stooth	post, pillar, prop	OED
glemish	a glimpse	OED	stote	to stand still, halt, stop	MED
glent	to be reflected; to gleam, flash	MED	studdle	a post	BT
glifting	staring, gazing	MED	<b>sw-</b>		
glise	to shine	BT	swabble	to sway about	OED
glisk	to glance over; to glitter, shine	OED	swaem	a trifler; a vain, foolish person	BT
glout	to scowl, look glum	OED	swancor	bending easily; active or graceful	BT
glusker	one who is squint-eyed	MED	sweak	to swing	OED
<b>scr-</b>			sweel	to swaddle, swathe	OED
scrille	with a high-pitched piercing sound	MED	sweif	a swinging stroke or blow; momentum	MED

scrimman	to shrink, draw up, contract	BT	swelth	a whirlpool	MED
scrogge	a shrub, stunted bush, brushwood	MED	swimbil	a swaying motion	MED
scrunt	stunted growth; tree stump	OED	<b>thr-</b>		
scruze	to squeeze	OED	thrack	to pack full, fill, cram	OED
scrynce	withered	BT	thrust	torment, affliction	MED
skrillen	to shriek, scream	MED	threa	to rebuke, chastise; torment, afflict	BT
skrike	to utter a shrill, harsh cry	MED	throht	oppression, affliction, hardship	BT
<b>sl-</b>			thropul	the trachea, windpipe	MED
sleck	mud, ooze	MED	thrumble	to jostle, squeeze	OED
slench	to slink, sneak, go quietly	OED	thrumen	to condense, compress, press in, cram	MED
sletch	to render slack	BT	thrutch	to press, crush, oppress	BT
slidor	a slippery, miry place	BT			

\*Sources: Bosworth Toller – BT, Middle English Dictionary – MED, Oxford English Dictionary – OED

### Appendix 3: Cue words used in each questionnaire

**Word set I:** bleddren, blee, cleam, clibbor, flabel, flaff, glise, glusker, scrimman, scruze, sleck, sloy, snatted, snuve, sprew, sprittle, staddle, stofn, swancor, sweel, thrust, thrutch

**Word set II:** blyscan, blout, clabbed, cluppel, fleme, flett, glemish, glent, scrynce, skrillen, sletch, slike, snoach, snur, spreinen, sprintle, stooth, studdle, swabble, sweif, throht, thrumen

**Word set III:** blat, blo, cleek, clomprish, flade, flathe, gled, glisk, scrogge, scrunt, slidor, slifor, sneke, snurl, sprendel, spreint, stathel, stela, sweak, swelth, threa, thropul

**Word set IV:** bletch, blore, clodder, clunch, fletting, flewsa, glifiting, glout, scrille, skrike, slench, slor, snoching, snurt, spra, spronk, stith, stote, swaem, swimbil, thrack, thrumble

### Questionnaire A

Part 1: Word set I		Part 2: Word set III	
1	blee – colour, complexion	23	cleek – to lay hold of, clutch, grasp, seize firmly
2	scrimman – to shrink, draw up, contract	24	sneke – a head cold
3	snuve – sniff; snuff	25	glisk – to glance over; to glitter, shine
4	glise – to shine	26	stela – the stalk of a plant
5	cleam – smear, cause to stick	27	slifor – slippery, deceitful
6	sloy – a derogatory term for a woman	28	blo – blackish-blue, livid, leaden-coloured
7	sprittle – a young shoot or twig	29	sweak – to swing
8	swancor – bending easily; active or graceful	30	scrogge – a shrub, stunted bush, brushwood
9	flabel – a fan	31	clomprish – somewhat thick or congealed

10	sleck – mud, ooze	32	snurl – a head cold, a nostril
11	bleddren – to become blistered	33	sprent – a sprinkler for holy water
12	scruze – to squeeze	34	swelth – a whirlpool
13	clibbor – adhesive, sticky	35	gled – a burning coal
14	glusker – one who is squint-eyed	36	thropul – the trachea, windpipe
15	staddle – a foundation, fixed place	37	flade – flake of snow
16	thrust – torment, affliction	38	scrunt – stunted growth, tree stump
17	snatted – (of the nose) flattened, snub	39	blat – livid, pale
18	sweel – to swaddle, swathe	40	stathel – to establish, found, fix, make steadfast
19	sprew – to spray	41	sprendel – a rod or stick used in thatching
20	stofn – a stem, or trunk of a tree	42	slidor – a slippery, miry place
21	flaff – to flap, flutter	43	flathe – a skate, ray (fish)
22	thrutch – to press, squeeze, oppress	44	threa – to rebuke, chastise; torment, afflict

## Questionnaire B

Part 1: Word set II		Part 2: Word set IV	
1	blout – soft, flabby, pliable	23	clodder – a clotted or curdled mass
2	skrillen – to shriek, scream	24	snochinge – speaking through the nose
3	snur – to snort	25	glifting – staring, gazing
4	glent – to be reflected; to gleam, flash	26	stote – to stand still, halt, stop
5	clabbed – clustered, clumped, coagulated	27	slench – to slink, sneak, go quietly
6	sletch – to render slack	28	blore – loud wailing; loud talking, bluster, bragging
7	spreinen – to sprinkle, scatter	29	swimbil – a swaying motion
8	swabble – to sway about	30	scrille – with a high-pitched piercing sound
9	flett – ground floor (of a house)	31	clunch – a lump; lumpen
10	slike – slime, sludge	32	snurt – to sneer
11	blyscan – to be red, shine	33	spronk – a shoot, sprout
12	scrynce – withered	34	swaem – a trifler; a vain, foolish person
13	cluppel – a fastening, a coupling	35	glout – to scowl, look glum
14	glemish – a glimpse	36	thrumble – to jostle, squeeze
15	stooth – a post, pillar, prop	37	flewsa – flowing, flux
16	throht – oppression, affliction, hardship	38	skrike – to utter a shrill, harsh cry
17	snoach – to snuffle; to speak through the nose	39	bletch – to blacken
18	sweif – a swinging stroke or blow; momentum	40	stith – to set firmly; unyielding, strong
19	sprintle – a shoot, twig	41	spra – to put forth branches, spring
20	studdle – a post	42	slor – mud, slime
21	fleme – current of a stream; flight (flee)	43	fletting – tangled mass of hair
22	thrumen – to condense, compress, press in, cram	44	thrack – to pack full, fill, cram

## Questionnaire C

Part 1: Word set III		Part 2: Word set I	
1	blo – blackish-blue, livid, leaden-coloured	23	clibbor – adhesive, sticky
2	scrogge – a shrub, stunted bush, brushwood	24	snuve – sniff; snuff
3	sneke – a head cold	25	glise – to shine
4	glisk – to glance over; to glitter, shine	26	staddle – a foundation, fixed place
5	cleek – to lay hold of, clutch, grasp, seize firmly	27	sleck – mud, ooze
6	slifor – slippery, deceitful	28	bleddren – to become blistered
7	sprent – a sprinkler for holy water	29	swancor – bending easily; active or graceful
8	sweak – to swing	30	scrimman – to shrink, draw up, contract
9	flade – flake of snow	31	cleam – smear, cause to stick
10	slidor – a slippery, miry place	32	snatted – (of the nose) flattened, snub
11	blat – livid, pale	33	sprittle – a young shoot or twig
12	scrunt – stunted growth, tree stump	34	sweel – to swaddle, swathe
13	clomprish – somewhat thick or congealed	35	glusker – one who is squint-eyed
14	gled – a burning coal	36	thrust – torment, affliction
15	stela – the stalk of a plant	37	flabel – a fan
16	thropul – the trachea, windpipe	38	scruze – to squeeze
17	snurl – a head cold; a nostril	39	blee – colour, complexion
18	swelth – a whirlpool	40	stofn – a stem, or trunk of a tree
19	sprendel – a rod or stick used in thatching	41	sprew – to spray
20	stathel – to establish, found, fix, make steadfast	42	sloy – a derogatory term for a woman
21	flathe – a skate, ray (fish)	43	flaff – to flap, flutter
22	threa – to rebuke, chastise; torment, afflict	44	thrutch – to press, crush, oppress

## Questionnaire D

Part 1: Word set IV		Part 2: Word set II	
1	blore – loud wailing; loud talking, bluster, bragging	23	clabbed – clustered, clumped, coagulated
2	scrille – with a high-pitched piercing sound	24	snur – to snort
3	snoching – speaking through the nose	25	glent – to be reflected; to gleam, flash
4	glifting – staring, gazing	26	studdle – a post
5	clodder – a clotted or curdled mass	27	sletch – to render slack
6	slench – to slink, sneak, go quietly	28	blout – soft, flabby, pliable
7	spronk – a shoot, sprout	29	sweif – a swinging stroke or blow; momentum
8	swimbil – a swaying motion	30	skrillen – to shriek, scream
9	flewsa – flowing, flux	31	cluppel – a coupling, a fastening
10	slor – mud, slime	32	snoach – to snuffle; to speak through the nose
11	bletch – to blacken	33	spreinen – to sprinkle, scatter
12	skrike – to utter a shrill, harsh cry	34	swabble – to sway about
13	clunch – a lump; lumpen	35	glemish – a glimpse
14	glout – to scowl, look glum	36	throht – oppression, affliction, hardship
15	stote – to stand still, halt, stop	37	flett – ground floor (of a house)
16	thrumble – to jostle, squeeze	38	scrynce – withered

<b>17</b>	snurt – to sneer	<b>39</b>	blyscan – to be red, shine
<b>18</b>	swaem – a trifler; a vain, foolish person	<b>40</b>	stooth – a post, pillar, prop
<b>19</b>	spra – to put forth branches, spring	<b>41</b>	sprintle – a shoot, twig
<b>20</b>	stith – to set firmly; unyielding, strong	<b>42</b>	slike – slime, sludge
<b>21</b>	fletting – tangled mass of hair	<b>43</b>	fleme – current of a stream; flight (flee)
<b>22</b>	thrack – to pack full, fill, cram	<b>44</b>	thrumen – to condense, compress, press in, cram

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