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SAMPLING: A THORNY ISSUE IN SOCIAL SCIENCES¹

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Imagine for a moment that you are a novice political scientist collecting data on British people's attitudes towards Brexit. You've decided to interview 100 random people on Trafalgar Square on a Sunday. You're in luck that afternoon: lots of people are happy to answer your questions. Had you looked a little closer, you'd have recognised the blue EU flags with golden stars being waved, you'd have recognised Nick Clegg addressing the crowd and you wouldn't have been so surprised that evening that 99% of your sample was opposed to Brexit. Constituting a representative sample of a population can give researchers a serious headache. Although the above example is a bit extreme, it is easy for applied linguists to underestimate the consequences of using less-than-perfect sampling strategies.

The gold standard is probability sampling, which aims to constitute a 'representative sample' of the general population. It relies on random sampling: 'whereby a sample is drawn such that each member of the population has an equal probability of being included in that sample' (Ness Evans & Rooney, 2013: 126). This rarely happens in our field but that it is not really a problem because we 'are typically testing theories, not generalizing to entire populations' (p. 127). However, random assignment of participants to groups is very important as it is 'an important assumption of several statistical procedures' (p. 127).

The reason applied linguists do not use random sampling is that we cannot afford it. It is expensive. NatCen Social Research based in London, for example, uses a random online and telephone panel (<http://www.bsa.natcen.ac.uk/>) covering the UK. It is based on the British Social Attitudes representative sample. The cost for using that panel (2,446 people aged over 18) is more than £1,000 per question. It is expensive because creating a truly representative sample of the UK population, based on the Postcode Address File, is very complex and time-consuming. Moreover, the panel members need to be contacted by telephone as some may not have Internet access. Another way of doing random sampling is through random digit dialling (RDD), which again is very expensive because many calls must be made to get one working residential number (<https://www.icpsr.umich.edu/icpsrweb/instructors/setup/notes/sampling-telephone.jsp>). Depending on the target group the sample size needs to be increased to allow for statistical analysis. So for example, if the researcher knows (or estimates) that the target group are about 5 per cent of the UK population, in order to find them in a random sample, large numbers of people will have to be contacted - contacting 100 will yield only 5 participants; contacting 1000 will yield about 50 and so on. One way to limit the cost of random sampling is through weighting of the data set, but that is only marginally helpful, as sometime it is difficult to even calculate the weights (Comănanu, personal communication, 28/11/2016).

Moreover, opinion polls during the 2015 national elections in the UK that were based (in theory) on stratified random sampling (i.e. combination of categorization and randomization where random samples are taken for particular groups in the population) got the predicted election outcome spectacularly wrong. An inquiry found that the pollsters got the outcome of the general election wrong because of unrepresentative poll samples (<http://www.bbc.co.uk/news/uk-politics-35347948>).

Non-probability sampling is more common in our field, so named because 'it is impossible to specify the probability of selecting any one individual' (Ness Evans & Rooney, 2013: 131). Non-probability sampling is easier to use, is cheaper to carry out as no effort is made to ensure that the sample reflects the characteristics of the general population. As Dörnyei explains, there are

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'strategies that try to achieve a trade-off, that is, a reasonably representative sample using resources that are within the means of the ordinary researcher' (Dörnyei, 2007: 97).

There are different types of non-probability sampling: Quota sampling where the goal is to select participants with particular characteristics until sufficient numbers have been reached. This would be used, for example, for a study on gender effects in SLA, where an equal number of male and female language learners would be needed. The second procedure is referral sampling, also called snowball sampling because participants recruit their friends, who spread the call for participation to their friends, and so on (Ness Evans & Rooney, 2013).

Researchers need to be very cautious 'in generalizing the results to populations that may differ from our sampled population' (Ness Evans & Rooney (2013, p. 132). Applied linguists typically use convenience sampling as they typically collect data from their own students who represent a "captive" participant pool. Students are gently coerced in participating to obtain a partial course credit or to earn a little money. They are smart, accessible, willing, experienced in filling out questionnaires and answering questions, and they are cheap. Such a sample is fine, as long as the researcher realises that the results are not automatically generalizable to the whole (even student) population. A sample of students – preferably from different institutions- is fine for research on students' opinions but it would be inadequate for broader research, for example, on the opinions of the British population on Brexit.

Self-selection bias is inevitable in our field. Since we cannot force people to participate (and even we could, the data might be of poor quality), only those who are interested in the topic of the investigation and have opinions about it will be willing to spend time filling out an online questionnaire, or being interviewed on it. The bias does not undermine the research but it requires the researchers to be very careful with the interpretation of the results. In Dewaele and MacIntyre (2014, 2016), for example, we used an online questionnaire to collect data on the positive and negative classroom emotions from 1746 foreign language learners from all over the world. As is typical in research on language and emotion (Dewaele, to appear), we had a large proportion of female participants (74%), of university-level participants (88%), and the average age was 24 years. We were pleased that the mean scores for Foreign Language (FL) Enjoyment were significantly higher than for FL Classroom Anxiety. We then realised that we could not conclude that FL learners in general report experiencing more enjoyment than anxiety in class. The sample might have been very large in applied linguistic research but it was very likely that learners who liked FL learning much were more likely to fill out the questionnaire. Those who disliked the FL classes were less likely to participate. Hence, our participants represented a sample of the more motivated FL learner population. To conclude, it is fine to work with non-random samples as long as the necessary caveats are included about the generalisability of the findings.

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