

## IMRaD

### **What is an IMRaD report?**

“IMRaD” format refers to a paper that is structured by four main sections: Introduction, Methods, Results, and Discussion. This format is often used for lab reports as well as for reporting any planned, systematic research.

### **Introduction – Make a case for your research**

The introduction explains why this research is important or necessary. Begin by describing the problem or situation that motivates the research. Move to discussing the current state of research in the field; then reveal a “gap” or problem in the field. Finally, explain how the present research is a solution to that problem or gap. If the study has hypotheses, they are presented at the end of the introduction.

Your introduction would typically include some variation of the following:

- Statement of the topic you are about to address
- Current state of the field of understanding (often, we call this a literature review and it may even merit having its own section).
- Problem or gap in knowledge (what don't we know yet or need to know? what does the field still need to understand? what's been left out of previous research? is this a new issue that needs some direction?)
- Forecast statement that explains, very briefly, what the rest of the paper will entail, including a possible quick explanation of the type of research that needs to be conducted.

### **Methods – What did you do?**

The methods section tells readers how you conducted your study. It includes information about your population, sample, methods, and equipment. The “gold standard” of the methods section is that it should enable readers to duplicate your study. Methods sections typically use subheadings.

Sample Proposal:

## 1. Introduction

*Topic and background:*

Arabic post-velar sounds, emphatics /s, d, ḏ, t/ laryngeals /ʔ, h/, pharyngeals /ʕ, ħ/, and uvulars /χ, ʁ/ have been the subject of debate and discussion in a number of studies in Arabic literature (Ghazeli, 1977; Herzellah, 1990; McCarthy, 1994; Zawaydeh, 1999). Some linguists group emphatics with laryngeals /ʔ, h/, pharyngeals /ʕ, ħ/, and uvulars /χ, ʁ/ in the same category of Arabic guttural class (Zawaydeh, 1999). Others consider emphatics a separate set (McCarthy, 1994; Sibawayh, 800).

*Gap:*

All modern studies used a form of endoscopy which is good for investigating movements in the pharynx. However, it is impossible to see using endoscopy whether the tongue back/dorsum is raised or lowered during the articulation of these sounds. Ultrasound technology, on the other hand, is optimal for viewing the anterior and posterior parts of the tongue. One recent study by Zeroual et al. (2011) used ultrasound to investigate Moroccan Arabic, MA, in order to answer a number of questions. The relevant point is the question related to the nature of secondary articulation in MA emphatics. This study, however, did not indicate whether there is any difference between uvular stop /q/ and uvulars fricatives /χ, ʁ/. Also, it did not show whether emphatics are similar to uvular stop /q/ or not.

### 1.1 Questions

From the above discussion a number of questions and remarks come to mind. Excluding Arabic laryngeals, which do not involve any supraglottal vocal tract configurations of their own, what do the other sounds have in common to be grouped as a class? In other words, what constitutes a guttural class in Arabic? Also, what are the differences between the articulations of emphatics, uvulars and pharyngeals? Another topic that needs to be addressed is whether emphatics are uvularized or pharyngealized.

## 2. Methodology

To answer the above questions, this study uses ultrasound to examine the tongue involvement in the articulation of these sounds.

### 2.1 Subjects and stimuli

Six native speakers of Arabic will be recruited, I will aim for 3 males and 3 females. The principal dialects of the study will be Saudi dialects. All participants will have to be born and raised in Saudi Arabia and speak Saudi Arabic from their childhood.

A list of nonsense utterances with the form /ʔaCa/ is prepared, Table 1. Each word is to be repeated five times by each participant.

The underlined consonants are the emphatic ones.

Table 1.

1.ʔa <u>s</u> a	2.ʔa <u>k</u> a	3.ʔa <u>t</u> a	4.ʔa <u>d</u> a
5.ʔa <u>ḏ</u> a	6.ʔa <u>ḥ</u> a	7.ʔa <u>ʕ</u> a	8. ʔa <u>ħ</u> a
9.ʔa <u>χ</u> a	10.ʔa <u>ʁ</u> a	11.ʔa <u>ʕ</u> a	12. ʔa <u>ħ</u> a