

PROJECT TITLE: Learnability of Root-and-Pattern Morphology

## INVESTIGATOR INFORMATION

Principal Investigator Name, Degree(s): Shiloh Drake, MA

Affiliation  UA  B-UMG  Other: \_\_\_\_\_

Principal Investigator **UA NetID** sndrake

Status/Rank: Ph.D. Student

Center: \_\_\_\_\_

Department: Linguistics

College: Social and Behavioral Sciences

Contact phone: 714-329-9211

Official Institutional Email: sndrake@email.arizona.edu

## ADVISOR CONTACT INFORMATION (REQUIRED FOR ALL STUDENTS AND RESIDENTS)

Name, Degree(s), **UA NetID**: Adam Ussishkin, Ph.D. ussishki

Contact phone: 520-626-7121

Official University Email: ussishki@email.arizona.edu

## ALTERNATE/COORDINATOR or Co-PI CONTACT INFORMATION

Name, **UA NetID**: \_\_\_\_\_

Contact phone: \_\_\_\_\_

Official University Email: \_\_\_\_\_

## SECTION 1: REQUIRED SIGNATURES

### 1. PRINCIPAL INVESTIGATOR

I will conduct my study according to the University of Arizona HSPP policies and procedures for research with human subjects.

_____	12/22/15	Shiloh Drake
Signature	Date	Print Name

### 2. ADVISOR (FOR ALL STUDENTS AND RESIDENTS ACTING AS THE PI)

I will oversee the student researcher according to the University of Arizona HSPP policies and procedures for research with human subjects.

_____	22 Dec 2015	Adam Ussishkin
Signature	Date	Print Name

### 3. SCIENTIFIC/SCHOLARLY REVIEW (SEE HSPP GUIDANCE ON REQUIREMENTS FOR SCIENTIFIC/SCHOLARLY ASSESSMENT - INCLUDE DOCUMENTATION FOR OPTIONS A AND B WITH SUBMISSION MATERIALS.)

- a.  Nationally based, federal funding organization (NIH, NSF) subject to full peer review  
b.  Nationally based, non-federal funding organization (March of Dimes, Amer Academy of Pediatrics) subject to peer review  
c.  Locally constituted peer review (signature required)

_____	_____	_____
Signature	Date	Print Name

### 4. DEPARTMENT/CENTER/SECTION REVIEW

I have reviewed this application and determined that all departmental requirements are met and that the investigator has adequate resources to conduct the Human Research.

_____	_____	_____
Signature	Date	Print Name/Email

### 5. RESPONSIBLE PHYSICIAN (PROJECTS INVOLVING MEDICAL PROCEDURES WHICH THE PI IS NOT AUTHORIZED TO CONDUCT)

I am a physician licensed by the State of Arizona (or US license for the SAVAHCS). I will be responsible for ensuring that all procedures that are part of this project and that require the attendance of a licensed physician will have a suitable physician present during the procedures. If at any time this is not possible, I will inform the IRB before any procedures are conducted.

_____	_____	_____
Signature	Date	Print Name

### 6. NATIVE AMERICAN OR INTERNATIONAL INDIGENOUS POPULATIONS REVIEW

Signature needed only if research takes place in Indian Country or among international Indigenous populations, actively recruits Native Americans or international Indigenous populations for enrollment, and/or requires stratification of Native Americans or international Indigenous populations as one of the statistical analyses or study aims.

- Contact American Indian Studies, (520) 621-7108

I have examined the proposal cited above and advise that further appropriate tribal/Indigenous approval  is or  is not necessary.

_____	_____	_____
Signature	Date	Print Name

## SECTION 2: GENERAL INFORMATION

1. How many Human Research studies does the PI have open?

2

2. How many research staff will be involved in the Human Research?

1

3. What is the expected length of this project?

Up to 5 years

4. Retention of study materials before, during, and after completion of the project:

a. Where will original signed consent and PHI Authorization documents be stored (building name and room)? Location: N/A

b. How long will consents be maintained after conclusion of the project?

6 years (UA standard)  6 years after child reaches 18  Other (explain): Data will not

be destroyed

5. Is or will the project be funded by an external funding source?  No  Yes- Complete below:

a. Funding PI: Adam Ussishkin (PI) & Shiloh Drake (Co-PI)

b. Proposal Title: The Learnability of Semitic Root-and-Pattern Morphology

c. Funder Name: National Science Foundation

d. Total funding amount **OR** per subject amount: \$17,428 (PENDING)

e. UAccess- Provide one of the following below:

i. Proposal Development #:

ii. Institutional Proposal #:00702999

f. IRB Payment eDoc # (Required for For-profit sponsored research):

*Submit complete copy, cover-to-cover, of grant or award.*

6. Conflict of Interest (COI):

The Principal Investigator hereby affirms that ALL individuals who meet the definition of [investigator](#) for this project in the current *Policy on Investigator Conflict of Interest in Research* have completed the mandatory [Conflict of Interest training](#) and [Disclosure of Significant Financial Interests](#).

Yes - All individuals who meet the definition of "investigator" have completed COI training and disclosure.

No (explain):

7. Additional requirements:

Certain types of research require additional regulatory documentation. Please identify which of the following apply to your project. Complete the appropriate Appendix and submit as part of the submission materials.

Children (subjects under 18) - Appendix A

Drugs/Devices (A clinical investigation of a drug or device) - Appendix B

Multi-Site study (The UA IRB will review research activities for an investigator or research staff not affiliated with the UA who is 'engaged in the research' (e.g. consenting, collecting data, or analyzing identifiable information) - Appendix C

- Pregnant Women/Neonates - Appendix D
- Prisoners - Appendix E
- Waivers of consent, waiver of a signature, or waiver or alteration of PHI - Appendix F
- None apply to the proposed study

8. Location of Research **Check all that apply**

Banner – University Medicine Group:

- |   |   |  |
|---|---|--|
| <input type="checkbox"/> Phoenix Campus | <input type="checkbox"/> Biological specimens | <input type="checkbox"/> Clinical Data |
| <input type="checkbox"/> Tucson Campus  | <input type="checkbox"/> Biological specimens | <input type="checkbox"/> Clinical Data |
| <input type="checkbox"/> South Campus   | <input type="checkbox"/> Biological specimens | <input type="checkbox"/> Clinical Data |

University of Arizona Cancer Center:

- |   |   |  |
|---|---|--|
| <input type="checkbox"/> North Campus         | <input type="checkbox"/> Biological specimens | <input type="checkbox"/> Clinical Data |
| <input type="checkbox"/> Orange Grove Clinics | <input type="checkbox"/> Biological specimens | <input type="checkbox"/> Clinical Data |
| <input type="checkbox"/> Phoenix              | <input type="checkbox"/> Biological specimens | <input type="checkbox"/> Clinical Data |

Other: University of Arizona, Tucson Campus; University of Malta, Msida Campus

### SECTION 3. PROJECT NARRATIVE

#### 1) Background

Previous research has shown us that the parts that make up words, such as suffixes, prefixes, roots, and patterns, are psychologically real, and can be tested and manipulated in a laboratory setting. Research has also shown that even word structures that are not commonly attested in the world’s languages are able to be learned—albeit with great difficulty—by humans who are otherwise unfamiliar with those word structures.

Something that has not been explored in the previous research is whether experience with forming words in Semitic languages like Arabic, Hebrew, and Maltese is dependent on speaking those languages in some capacity. Will it be easier for people who already speak a language like Arabic to learn novel words that are formed based on rules found in Semitic languages?

#### 2) Purpose

The primary question to be answered is whether adults need to speak a language like Arabic or Maltese to be able to learn how to form made-up words with rules mimicking those languages. The hypothesis is that the relative difficulty of learning to follow the structure is related to how rare it is in the world’s languages; because this structure is difficult to learn by adults unfamiliar with its use, we do not see it spreading to related languages, unlike other grammatical structures that we can observe spreading to adjacent areas over time.

#### 3) Lay Summary (approximately 400 words)

This research seeks to answer questions about the process by which learning how to form words works, as well as what kind of experience adults require to best learn how to form words with familiar and unfamiliar rules.

The subject population proposed for the research will have different amounts of experience forming words using rules based on root-and-pattern morphology. In root-and-pattern morphology, words must be broken apart into discontinuous chunks, and those chunks may be combined with other parts to form new words. For instance, the Arabic word *kataba* 'he wrote' is composed of a root, *KTB*, and a pattern, *\_ a \_ a \_ a*. A fluent speaker or learner of Arabic will know that this root has to do broadly with things that are written or letters, while the pattern indicates a third person singular past tense form of the verb. The root may be used with other patterns to create other words, such as *maktaba* 'office' or *kitaab* 'book'. The pattern may be used with other roots to create other words as well, such as *xaraja* 'he left' or *fa3ala* 'he did'.

The Maltese subjects will shed light on this question in a different way, as Maltese uses multiple methods to form words: both root-and-pattern morphology similar to the above examples, as well as word formation processes like English and Italian use, where words are made up of contiguous chunks and additions are appended to the beginning or end of words (such as *bird-s* or *dis-like*).

#### 4) Setting of the Human Research

The Tucson component of the research will take place at the University of Arizona in Douglass 303 and Douglass 314. Participants will be briefed there before and after taking part in the research as well. The portion of the research conducted in Malta will take place in the language labs at the Institute of Linguistics at the University of Malta.

#### 5) Resources available to conduct the Human Research

Between the two rooms in Douglass, there are a total of three sound-attenuated booths with PCs equipped to run the behavioral software used to present stimuli for psycholinguistics experiments and record subjects' responses and reaction times. This equipment is dedicated to use by the linguistics department and will be limited only by others running experiments at the same time.

The PI has experience designing and conducting psycholinguistic research. The PI's advisor has extensive experience designing and conducting psycholinguistic research. On the basis of this expertise, all personnel will be trained to ensure safety, accuracy, and consistency in measurement. This training will include use of the collection and presentation software and participant rights, as well as regular evaluation and review.

The PI has permission to run experiments at the University of Malta thanks to previous research relationships established there. Here, the PI will have access to a quiet room, where research will be conducted using a portable computer and noise-attenuating headphones. Access to the portable computer is limited to the PI and advisor.

#### 6) Study Population

Up to 200 participants will be recruited from the University of Malta, and up to 400 participants will be recruited from the University of Arizona. Subjects must fall into one of four populations: native

English speakers, native Arabic speakers, native Maltese speakers, and advanced learners of Arabic. Due to the relative difficulty of recruiting these groups, all but the native English speakers will receive monetary compensation. In exchange for participating in the experiment, native Maltese speakers will receive €5, and native Arabic speakers and advanced Arabic learners will receive \$5.

Men and women of all ethnicities will be encouraged to participate, and participants are expected to be representative of the ethnic groups present in these subject populations. The native Arabic speakers and native Maltese speakers are expected to be at least bilingual, with English being one of the languages they can speak and read.

No vulnerable populations are targeted for participation in this study. Because of the entirely non-medical nature of the experiment, any subjects who are or who plan on becoming pregnant are not considered a vulnerable population for this study. All participants are to be adults of age 18 or older.

The risk associated with participation in this study is no greater than that in daily life.

## 7) Recruitment Methods and Consenting Process

- a. **Recruitment Process:** Potential subjects will self-identify based on descriptions provided on the websites maintained by the institutions' linguistics departments as well as emails sent to instructors that have contact with the relevant populations to notify their students of an opportunity to participate in an experiment, such as through Arabic courses through the University of Arizona or courses directed at English language learners through the Center for English as a Second Language (CESL) (only if approved by CESL). Sample texts for both website descriptions and for emails are provided in Appendix 1. Potential subjects may also be notified of this experiment by word of mouth, either by the PI (e.g., in a classroom setting), other instructors, or subjects informing their friends who fit the requirements of the experiment. Oral announcements will contain information about who is eligible for the study, what to expect to do during the study, and how to contact the PI. Additionally, with permission from the departments, flyers will be posted in relevant departments (e.g., linguistics, MENAS, CESL) with information similar to that presented orally, or found in the emailed advertisements and website descriptions in Appendix 1.
- b. **Informed Consent:** Participants will be presented with a disclosure form (Appendix 2) on the same computer screen that they will view the experiment on. The study procedure, risks, and benefits, as well as the voluntary nature of the study, will also be verbally explained to the participants by a researcher when they arrive at the laboratory. After reading the disclosure form in Appendix 2, the researcher will ask if the participants have any questions and will answer questions asked. The participants will then be reminded that their participation in the study is voluntary and that they may stop at any time.

A disclosure form with no signature is sufficient for this study in the place of a consent form as the tasks are similar to what participants may do on their own computers every day, and the study presents no more risk than looking at a computer screen and typing does. This will be accompanied by a verbal explanation or clarification by the researcher, if necessary. The participants may take as much time as they desire to review and/or discuss the disclosure form, but it is not anticipated that more than 20 minutes will be required.

After the subjects have completed the experimental task and the language background questionnaire, they will be debriefed by the PI using the script in Appendix 3. They will be able to discuss the experiment and ask questions about the experiment with the PI during this point.

As all subject groups are able to read and speak English fluently, all forms will be presented in English.

Protection from undue influence to participate comes from the fact that all participation is strictly voluntary, and that within the subject populations, the participants will self-select for participation. Participants will be reminded that their participation is voluntary during the consent process, and this is also stated on the disclosure form. Each participant will also be receiving either extra credit in a linguistics course or a small sum of money (\$5 or €5) for their participation.

## **8) Research procedures involved in the Human Research**

All participant procedures will take place in person and will be carried out in labs at the Linguistics Department at the University of Arizona or at the Linguistics Institute at the University of Malta. The participant will be shown to a room with a computer and a keyboard or button box to record responses. First, they will be asked to read the disclosure form, which will be presented to them on the computer screen. This should take no more than 20 minutes. After the participants confirm that they agree to take part in the experiment, the researcher will verbally ask them for their native language, other languages spoken, their age, gender, and the hand that they use to write with. During the experimental task, the participant will listen to words and sentences and may also see pictures presented on the computer screen. The participant will be asked to respond to the stimuli by typing on a keyboard. Some sample stimuli may be found in Appendix 3. This portion of the study should take no more than 30 minutes. After completing the experimental task, the participants will fill out a short language background questionnaire (Appendix 5). When the PI has used this in previous research, this has taken no longer than 10 minutes.

When this is complete, the participant will be debriefed using the script in Appendix 4.

Data collected from participants comprises accuracy ratings and generated nonsense words. For example, they may listen to a few sentences in a made-up language, and then asked if they remember hearing a word, if the word that they hear is a possible word, or to make up a word based on other words they have heard. Information collected by the research staff includes languages spoken, age, gender, and handedness. Subjects will also fill out a language background questionnaire (Appendix 5). This information will be stored separately from the experimental data collected from the participants and is of a nature that will not lead to identification of participants.

## **9) Cost to subjects**

The cost to each subject is no more than 60 minutes of their time, as well as any transportation costs in order to arrive at the laboratory at the university.

## **10) Risks to subjects**

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Form 200-1-2015-00

The risk associated with participation is no greater than that in daily life. Participants will be listening to words and sentences in English or a made-up language, reading words, and looking at pictures on a computer screen for no more than 60 minutes, and typing on a keyboard or responding on a button box in response to instructions on the screen. If subjects do experience any discomfort, they are freely allowed to cease participation in the study.

### **11) Potential benefits to subjects and/or society**

There are no direct benefits to subjects in this study. The benefit to society at large is that we will gain a better understanding of how humans understand, use, and construct words in multiple languages.

### **12) Provisions to protect the privacy of subjects and the confidentiality of data**

- a. Protection of subject privacy:** Participants will consent, participate, and be debriefed in the privacy of a laboratory setting; only research staff will have knowledge of participation. Because of the low-risk nature of this experiment, this is sufficient protection of privacy during participation.
- b. Protection of data confidentiality:** Collected experiment data will be associated with a subject number carrying no link to personally identifying information. This data will be stored on a password-protected computer and backed up on an encrypted external hard drive. Access to both items as well as the password is limited to research personnel. Data will also be backed up to a server maintained by the University of Arizona. Due to the anonymity of the data collection, no signature will be collected in the consent process. The nature of the subjects' responses is such that individuals will not be identifiable by their responses.

### **13) Subject compensation**

Subjects will be compensated with either course credit, \$5, or €5, depending on the subject population. The monetary amounts are judged to be approximately the price of a nice cup of coffee, and not large enough to tempt subjects to participate in the experiment simply to earn the money when they otherwise would not want to be included in the study.

### **14) Withdrawal of subjects**

Subjects will not be withdrawn from the study.

### **15) Sharing of results with subjects**

Subjects will be advised at the end of the experiment that if they are interested in the outcome of the experiment, they should contact the researcher at the end of the semester. Results shared with the subjects include only data otherwise relevant to publication, and no potentially identifying information, or information about specific subjects' performance on the tasks.

### **16) Information management**

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Form 200-1 2015-08



### Types of data produced

The proposed project includes experiments that will be conducted via a computer. The human subjects data that will be collected as a result of the experiment include background demographic information such as age, gender, language background and education, and health-related information such as the presence of hearing or visual deficits that may interact with the experiment. Participants' accuracy on experiment stimuli will also be retained. Participants' responses will be recorded as a text file, which will be converted to a CSV file for ease of analysis. The purpose of collecting the recording accuracy is to determine the error rates of grammaticality judgment and nonsense word production. The demographic data will be collected for the purposes of publication and dissemination of results in order to effectively describe the participant population. All data collected from participants will be of a non-sensitive nature, and any identifying information apart from age, gender, language background, and presence or absence of hearing or visual disorders will not be retained in the data.

### Data storage and retention

Experiment stimuli and data files will be backed up on a secure password-protected server at the College of Social and Behavioral Sciences at the University of Arizona, which is backed up by the college's Technical Support Group. Fieldwork in Malta will be done on the Co-PI's laptop computer and will be backed up to the University of Arizona server. Backups of the data will also be made to an external hard drive to be stored in a locked cabinet in the PI's lab at the University of Arizona. Data will be retained for at least ten years after publication of the studies reporting these data. As the data is non-sensitive, keeping the data presents no risk, and if the data were needed again in the future and it had been destroyed, it would be necessary to inconvenience more subjects in order to re-collect the data.

### Data dissemination and sharing

Significant findings from the work conducted under this award will be prepared and submitted for presentations at professional conferences and publication in professional journals. Data will be available for sharing not longer than one year after publication and presentation. In the event that such data sharing requests from interested scientists are made, the PI and Co-PI will share data in a manner that maintains the privacy of the subjects.

It is not anticipated that intellectual property (IP) issues concerning this research will occur. In the event trademark issues arise as a result of this data, it will be governed by the Arizona Board of Regents IP policy and the University of Arizona IP policy, and data will be shared in a manner appropriate to these IP guidelines.

## SECTION 4: LIST OF ATTACHMENTS FOR THIS SUBMISSION (REQUIRED) (Items listed here are expected to be attached as separate documents. These documents will appear in the UA HSPP IRB approval letter as 'documents submitted concurrently' with the review.)

Document Name	Version Date
1. F107: Verification of Training Form	1. 12/22/15
2. Grant Application (incl. PI/Co-PI biosketches)	2. 01/12/16
3. Appendix F: Waiver of Consent/PHI	3. 02/07/16

4. Letter of Support: U of Malta	4. 01/11/16
5. Appendix 1: Recruitment Scripts	5. 02/07/16
6. Appendix 2: Disclosure Form	6. 02/07/16
7. Appendix 3: Debriefing Script	7. 12/20/15
8. Appendix 4: Sample Stimuli	8. 12/20/15
9. Appendix 5: Language Background Questionnaire	9. 05/20/14

**See HSPP website for submission requirements.**

**Items needed for approval:**

- **F107: Verification of Training Form**
- **Current PI/Co-PI CVs or biosketch**, if not included with copy of grant application
- **Informed Consent/Permission/Assent Form(s)** – including study specific release of information documents, DHHS approved sample consent forms. If consent will not be documented in writing, a script of information to be provided orally to subjects

**Other Items as applicable:**

- **Appendix A - Children**
- **Appendix B - Drug/Device**
- **Appendix C- Multi Site Research**
- **Appendix D- Pregnant Women and Neonates**
- **Appendix E- Prisoners**
- **Appendix F- Waiver of Consent/ PHI**
- **Biosafety Review letter** (for UA - Institutional Biosafety Committee)
- **Certificate of Confidentiality**
- **Compressed Gases Review letter** (for UA – Research Instrumentation)
- **Contract** – complete or draft copy of contract including budget
- **Data Collection Tools** – surveys, questionnaires, diaries not included in the protocol, data abstraction form for records review
- **Data Monitoring Charter and Plan**
- **Drug/Device information** – Investigator's Brochure, drug product sheet, device manual, user's manual, instructions for use, package insert, IND/IDE documentation, FDA 1572 form, 510k indication, FDA exemption, sponsor determination of device risk, etc.
- **Export Control Review**
- **Grant Application(s)** – cover-to-cover copy of grant, regardless of home institution or funding agency, and a copy of the Notice of Grant Award.
- **Other Approval letters** (e.g., school districts, Tribal, other IRB approvals)
- **Participant Materials** – written materials to be provided to or meant to be seen or heard by subjects (e.g. study newsletter, physician to participant letter, wallet cards, incentive items, holiday/birthday cards, certificates, instructional videos/written guides, calendars, certification of achievement, etc.)
- **Payer coverage analysis**
- **PHI Authorization Form(s)**
- **Protocol** – including all amendments/revisions, sub- or extension-studies
- **Radiation Safety Review letter**- needed regardless if the radiation device is approved and used standard of care
- **Recruitment Materials** – telephone scripts, flyers, brochures, websites, email texts, radio/television spots, newspaper advertisements, press releases, etc.
- **Scientific Review Committee** letter (for cancer related projects – AZCC SRC; other units as applicable if the unit has a scientific review committee)
- **Site Authorizations** for research purposes and/or access to administrative records/samples
  - External sites (such as schools, other hospitals or campuses, etc.)

- B-UMG approval
- **Supplemental site information** (for sites engaged in research where the UA is the IRB of record)
  - Copy of any approvals granted from that site (including determinations if this site has an IRB of its own)
  - Site-specific F107
  - Copy of the site's human subjects training policy
  - CV and medical license (if applicable) of site PI
- **Travel Authorization documentation** (for UA – Office of Global Initiatives)
- **Use of retrospective research samples and/or data** – IRB approval letter, original consent under which samples/data were collected, letter allowing access to samples

# F107: Verification of Human Subjects Training Form (VOTF)

Use to list all current Key Personnel	
<b>IRB Project No.:</b>	
<b>Project Title:</b>	The Learnability of Root-and-Pattern Morphology
<b>Investigator:</b>	Shiloh Drake, M.A.
<b>Investigator's Contact Information:</b>	Phone/Official University Email: sndrake@email.arizona.edu
<b>Alternate Contact:</b>	Adam Ussishkin, Ph.D.
<b>Alternate Contact's Information:</b>	Phone/Official University Email: ussishki@email.arizona.edu

Name	UA Net ID	Research Role	Department & Institution	Consenting Individuals	CITI Training Date
Shiloh Drake	sndrake	PI	<input checked="" type="checkbox"/> UA <input type="checkbox"/> B-UMG <input type="checkbox"/> Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	12/22/15
Adam Ussishkin	ussishki	Co-PI; Advisor	<input checked="" type="checkbox"/> UA <input type="checkbox"/> B-UMG <input type="checkbox"/> Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	07/23/14
			<input type="checkbox"/> UA <input type="checkbox"/> B-UMG <input type="checkbox"/> Other	<input type="checkbox"/> Yes <input type="checkbox"/> No	
			<input type="checkbox"/> UA <input type="checkbox"/> B-UMG <input type="checkbox"/> Other	<input type="checkbox"/> Yes <input type="checkbox"/> No	
			<input type="checkbox"/> UA <input type="checkbox"/> B-UMG <input type="checkbox"/> Other	<input type="checkbox"/> Yes <input type="checkbox"/> No	
			<input type="checkbox"/> UA <input type="checkbox"/> B-UMG <input type="checkbox"/> Other	<input type="checkbox"/> Yes <input type="checkbox"/> No	
			<input type="checkbox"/> UA <input type="checkbox"/> B-UMG <input type="checkbox"/> Other	<input type="checkbox"/> Yes <input type="checkbox"/> No	
			<input type="checkbox"/> UA <input type="checkbox"/> B-UMG <input type="checkbox"/> Other	<input type="checkbox"/> Yes <input type="checkbox"/> No	
			<input type="checkbox"/> UA <input type="checkbox"/> B-UMG <input type="checkbox"/> Other	<input type="checkbox"/> Yes <input type="checkbox"/> No	



# Appendix F: Alteration/Waiver of Consent, or Alteration/Waiver of PHI

Used for when a Waiver of Consent, Alteration of Consent, or Alteration/Waiver of PHI is needed	
<b>IRB Project No.:</b>	
<b>Project Title:</b>	Learnability of Root-and-Pattern Morphology
<b>Investigator:</b>	Shiloh Drake, M.A.
<b>Investigator's Contact Information:</b>	Phone/Official University Email: sndrake@email.arizona.edu
<b>Alternate Contact:</b>	Adam Ussishkin, Ph.D.
<b>Alternate Contact's Information:</b>	Phone/Official University Email: ussishki@email.arizona.edu

## Section 1: Consent Process

Briefly explain the consent process for the project:

Participants will be presented with a disclosure form (Appendix 2) on the same computer screen that they will view the experiment on. The study procedure, risks, and benefits, as well as the voluntary nature of the study, will also be verbally explained to the participants by a researcher when they arrive at the laboratory. After reading the disclosure form in Appendix 2, the researcher will ask if the participants have any questions and will answer questions asked. The participants will then be reminded that their participation in the study is voluntary and that they may stop at any time.

A disclosure form with no signature is sufficient for this study in the place of a consent form as the tasks are similar to what participants may do on their own computers every day, and the study presents no more risk than looking at a computer screen and typing does. This will be accompanied by a verbal explanation or clarification by the researcher, if necessary. The participants may take as much time as they desire to review and/or discuss the disclosure form, but it is not anticipated that more than 20 minutes will be required.

After the subjects have completed the experimental task and the language background questionnaire, they will be debriefed by the PI using the script in Appendix 3. They will be able to discuss the experiment and ask questions about the experiment with the PI during this point.

As all subject groups are able to read and speak English fluently, all forms will be presented in English.

Protection from undue influence to participate comes from the fact that all participation is strictly voluntary, and that within the subject populations, the participants will self-select for participation. Participants will be reminded that their participation is voluntary during the consent process, and this is also stated on the disclosure form. Each participant will also be receiving either extra credit in a linguistics course or a small sum of money (\$5 or €5) for their participation.

## Section 2: Waiver or Alteration of Consent Complete section A or B as applicable to the study.

### A. Waiver of Informed Consent (45 CFR 46.116(d) and 21 CFR 50.55(d))

Describe the possible risks of harm to the subjects involved in this study and explain why the study



## Appendix F: Alteration/Waiver of Consent, or Alteration/Waiver of PHI

involves no more than minimal risk to subject:

Explain why the waiver/alteration will not adversely affect the rights and welfare of the subjects:

Explain why it is impracticable to conduct this research when informed consent is required:

Explain, if appropriate, how the subjects will be provided with additional pertinent information about the research after participation. If not appropriate, explain why:

If deception will be involved please explain when subjects will have the opportunity to decide to include their data in the research project:

### **B. Waiver of Documentation of Informed Consent** Complete either Subpart 1 or 2

#### *Subpart 1: (45 CFR 46.117(c)(1))*

Explain how the consent document is the only record linking the subject and the research:

Explain how the principal risk would be the potential harm resulting from a breach of confidentiality:

#### *Subpart 2: (45 CFR 46.117(c)(2))*

Describe the possible risks of harm to the subjects involved in this study and explain why the study involves no more than minimal risk to subject:

The possible risks to the subject are comparable to typing on a standard keyboard, listening to human speech on headphones, and looking at images and reading text on a computer screen. These are similar tasks that subjects may do themselves on a daily basis. They may experience some minor discomfort, but no more discomfort than they ordinarily would sitting on a chair and typing or looking at a screen for 30-60 minutes. This study does not involve any procedures that the subjects would not ordinarily encounter in their daily life as a student. This will be explained to each subject in the disclosure form (Appendix 2).

Describe how the research involves no procedures for which written consent is normally required outside the research context:

On websites such as Facebook, people may look at images and text on a screen while assuming any risks or discomfort while they do so. In addition, they spend short amounts of time typing. Similar to this, the tasks in this project ask the subjects to look at images, read text, and/or type short responses to things they see on the screen. In addition, people may be found listening to music or human speech through headphones in many places. Similar to this, the participants in this study will be asked to listen to speech through headphones played at an audible but not uncomfortably high volume (which may be adjusted at the subjects' request). Doing any of these activities during a day does not ordinarily require written consent outside the research context.

### **Section 3: Waiver or Alteration of PHI (45 CFR 164.512(i))** Complete if accessing medical record information

#### **A. Protected Health Information-** Describe the PHI being used or disclosed in your study

- Patient/subject name
- Address street location
- Address town or city



# Appendix F: Alteration/Waiver of Consent, or Alteration/Waiver of PHI

- Address state
- Address zip code
- Elements of dates (except year) related to an individual. (ie. DOB, admission/discharge dates, date of death)
- Telephone number
- Fax number
- Electronic mail (email) address
- Social security number
- Medical record numbers
- Health plan beneficiary numbers
- Account numbers
- Certificate/license numbers
- Vehicle identification numbers and serial numbers including license plates
- Medical device identifiers and serial numbers
- Web URLs
- Internet protocol (IP) address
- Biometric identifiers (finger and voice prints)
- Full face or comparable photographic images
- Any unique identifying number, characteristic or code (a rare disease can be considered a unique id)  
Describe:
- Link to identifier (code)

### **B. Record/Specimen Use** - Indicate your source(s) of health information

- Physician/clinic records
- Interviews/questionnaires
- Mental health records
- Billing records
- Lab, pathology and/or radiology results
- Biological samples obtained from the subjects
- Hospital/medical records (in- and out-patient)
- Data previously collected for research purposes
- Other; specify:

### **C. Request for Waiver or Alteration of Authorization (45 CFR 164.512(i))**

List every investigator, research staff member or other staff member who will have access to this data:

Describe the risks to privacy involved in this study and explain why the study involves no more than minimal risk to privacy:

Describe investigator's plan to protect identifiers from improper use or disclosure and to destroy them at the earliest time:

Explain why it is not possible to seek subjects' authorization for use or disclosure of the PHI:

Explain why it is not possible to conduct this research without use or disclosure of the PHI:



# Appendix F: Alteration/Waiver of Consent, or Alteration/Waiver of PHI

## Section 4: Attestation

### Principal Investigator (Required)

I assure the IRB that the informed consent and/or protected health information which I have detailed in this Waiver of Authorization and/or Consent application will not be reused (i.e.: used other than as described in this application) or disclosed to any person or entity other than those listed above, except as required by law, for authorized oversight of this research study, or as specifically approved for use in another study by the UA IRB.

I also assure the UA IRB that the information that I provide in this application is accurate and complete, and that the PHI that I request is the minimum amount of identifiable health information necessary for my research project.

	02/07/16	Shiloh Drake
Signature	Date	Print Name





6<sup>th</sup> January, 2016

To whom it may concern

**Re. hosting Ms Shiloh Drake, M.A., at the Institute of Linguistics of the  
University of Malta**

The Institute of Linguistics of the University of Malta is pleased to host Ms Shilo  
Drake (University of Arizona) in 2017.

Ms Drake will:

- have access to facilities, including library and ICT facilities;
- be able to engage in discussions with members of staff and students of the  
Institute of Linguistics, as well as other language departments;
- be able to present the results of her on-going Ph.D. research;
- participate in any relevant activities (courses, seminars, conferences, talks)  
held at the University of Malta
- have access to a subject population
- be provided with work space within the Institute.

Prof Ray Fabri, Chairman  
Institute of Linguistics

## Appendix 1

### Sample Recruitment Materials

The following are sample texts that will be used for recruiting subjects. It is possible that the actual texts will vary slightly from what is written below; however, the main ideas in each text will be the same.

*A. Information to appear on the experiment website maintained by the Linguistics Department at the University of Arizona - native English speakers*

This experiment consists of one session that will last up to 60 minutes. During the experiment, you will be asked to listen to an alien language and respond to questions on a computer screen about the language. You must be a native speaker of English in order to participate. You will receive course credit for your participation.

If you have questions about the study, please contact the researcher by sending an email to [sndrake@email.arizona.edu](mailto:sndrake@email.arizona.edu). An Institutional Review Board responsible for human subjects research at The University of Arizona reviewed this research project and found it to be acceptable according to applicable state and federal regulations and University policies.

*B. Information to appear on the experiment website maintained by the Linguistics Department at the University of Arizona - native Arabic speakers*

This experiment consists of one session that will last up to 60 minutes. During the experiment, you will be asked to listen to an alien language and respond to questions on a computer screen about the language. You must be a native speaker of Arabic in order to participate. You will receive \$5 for your participation.

If you have questions about the study, please contact the researcher by sending an email to [sndrake@email.arizona.edu](mailto:sndrake@email.arizona.edu). An Institutional Review Board responsible for human subjects research at The University of Arizona reviewed this research project and found it to be acceptable according to applicable state and federal regulations and University policies.

*C. Information to appear on the experiment website maintained by the Linguistics Department at the University of Arizona - advanced learners of Arabic*

This experiment consists of one session that will last up to 60 minutes. During the experiment, you will be asked to listen to an alien language and respond to questions on a computer screen about the language. You must be enrolled in third- or fourth-year Arabic in order to participate. You will receive \$5 for your participation.

If you have questions about the study, please contact the researcher by sending an email to [sndrake@email.arizona.edu](mailto:sndrake@email.arizona.edu). An Institutional Review Board responsible for human subjects research at The University of Arizona reviewed this research project and found it to be acceptable according to applicable state and federal regulations and University policies.

*D. Information to appear on the experiment website maintained by the Institute of Linguistics at the University of Malta - native Maltese speakers*

This experiment consists of one session that will last up to 60 minutes. During the experiment, you will be asked to listen to an alien language and respond to questions on a computer screen about the language. You must be a native speaker of Maltese in order to participate. You will receive €5 for your participation.

If you have questions about the study, please contact the researcher by sending an email to [sndrake@email.arizona.edu](mailto:sndrake@email.arizona.edu). An Institutional Review Board responsible for human subjects research at The University of Arizona reviewed this research project and found it to be acceptable according to applicable state and federal regulations and University policies.

*E. Recruitment email sent to instructors at the Center for English as a Second Language (CESL) (Will only recruit through CESL if approved by CESL.)*

Dear [instructor name],

I would appreciate it if you passed on the information contained in this email to your eligible students.

I am conducting a study in the Linguistics Department and I need native Arabic speakers (any dialect) to participate. They will listen to an alien language and then will answer questions about the language. This study will take approximately 60 minutes to complete. They will receive \$5 for their participation.

In order to sign up for the study or if they have any questions, please have your students email me directly at [sndrake@email.arizona.edu](mailto:sndrake@email.arizona.edu). An Institutional Review Board responsible for human subjects research at The University of Arizona reviewed this research project and found it to be acceptable according to applicable state and federal regulations and University policies.

*F. Recruitment email sent to Arabic instructors*

Dear [instructor name],

I would appreciate it if you passed on the information contained in this email to your students.

I am conducting a study in the Linguistics Department and I need native Arabic speakers (any dialect) to participate. They will listen to an alien language and then will answer questions about the language. This study will take approximately 60 minutes to complete. They will receive \$5 for their participation.

In order to sign up for the study, please have your students sign up via the Linguistics Department website. If they have any questions, please have them email me directly at [sndrake@email.arizona.edu](mailto:sndrake@email.arizona.edu). An Institutional Review Board responsible for human subjects

research at The University of Arizona reviewed this research project and found it to be acceptable according to applicable state and federal regulations and University policies.

## Appendix 2

### DISCLOSURE FORM

1  
2 Title of Project: **The Learnability of Root-and-Pattern Morphology**

3  
4 You are being invited to voluntarily participate in the above-titled research study. The purpose of  
5 the study is to understand how morphemes are used and processed. You are eligible to participate  
6 because you read and speak English and/or either Arabic or Maltese; you are a student enrolled  
7 at the University of Arizona, the University of Malta, or at the Center for English as a Second  
8 Language; and you are over 18 years of age.

9  
10 If you agree to participate, your participation will involve responding to sound or letter  
11 sequences (such as words). You will respond as directed. You will also be asked to fill out a  
12 questionnaire about your language use. The experiment will take place at the Linguistics  
13 Department or the Institute for Linguistics, and will last approximately 60 minutes.

14  
15 Any questions you have will be answered and you may withdraw from the study at any time.  
16 There are no known risks from your participation and no direct benefit from your participation is  
17 expected. There is no cost to you except for your time and transportation to the laboratory. If you  
18 are a native English speaker, you will be compensated with course credit; if you are a native  
19 Arabic speaker or an advanced learner of Arabic, you will be compensated with \$5; and if you  
20 are a native Maltese speaker, you will be compensated with €5.

21  
22 Only the principle investigators and research personnel will have access to your name and the  
23 information that you provide. In order to maintain your confidentiality, your name will not be  
24 retained after your participation. You may decide to not begin or to stop the study at any time.  
25 Your refusing to participate or your decision to discontinue your participation will have no effect  
26 on your student status. Any new information discovered about the research will be provided to  
27 you. This information could affect your willingness to continue your participation.

28  
29 You can email the Principal Investigator or the Principle Investigator's advisor to tell about a  
30 concern or complaint about this research study. The Principle Investigator is Shiloh Drake, a  
31 Ph.D. student in Linguistics at the University of Arizona, who can be emailed at  
32 [sndrake@email.arizona.edu](mailto:sndrake@email.arizona.edu). The Principal Investigator's advisor is Adam Ussishkin, Professor  
33 of Linguistics at the University of Arizona, who can be emailed at [ussishki@email.arizona.edu](mailto:ussishki@email.arizona.edu).  
34 If you have questions about your rights as a research subject you may call the University of  
35 Arizona Human Subjects Protection Program office at +1 (520) 626-6721. If you have questions,  
36 complaints, or concerns about the research and cannot reach the Principal Investigator, or want to  
37 talk to someone other than the Investigator, you may call the University of Arizona Human  
38 Subjects Protection Program office. If you would like to contact the Human Subjects Protection  
39 Program via the web (which can be anonymous), please visit  
40 <http://rgw.arizona.edu/compliance/human-subjects-protection-program>.

41  
42 By participating in this study, you are giving permission for the investigator to use your  
43 information for research purposes and to disseminate your responses in a manner that will  
44 maintain your privacy.

45 Thank you.

46 Shiloh Drake

### APPENDIX 3

The stimuli below are representative of the kinds of words the participants will hear and respond to throughout the experiment. All stimuli are nonsense words in English, Arabic, and Maltese.

<i>Root</i>	<i>Affix</i>	<i>Possible Words</i>
bacda	-dep	bacdadep
dafga		dafgadep
gakla		gakladep
manpa		manpadep
bacda	-nuss	bacdanuss
dafga		dafganuss
gakla		gaklanuss
manpa		manpanuss

Table 1. Sample stimuli in the concatenative grammar

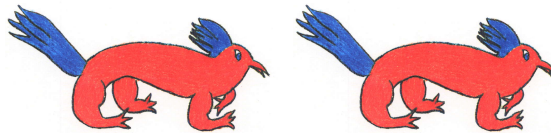
<i>Root</i>	<i>Default</i>	<i>Pattern</i>	<i>Possible Words</i>
BCD	bacada	ma _ a _ _ i	mabacdi
DFG	dafaga		madafgi
GKL	gakala		magakli
MNP	manapa		mamanpi
BCD	bacada	as _ i _ o _ a	asbicoda
DFG	dafaga		asdifoga
GKL	gakala		asgikola
MNP	manapa		asminopa

Table 2. Sample stimuli in the non-concatenative grammar

“Bacda!”



“Bacdadep!”



“Dafga!”



Type the word you would use.



“bacdadepdafgadepbacdadepgakladepdafgadepmanpadepbacdadepmanpadep...”

Is “dafgadep” a word that you heard? [YES]

Is “gadepbac” a word that you heard? [NO]

Would “jakladep” be a possible word? [YES]

Would “jakdepla” be a possible word? [NO]

## **APPENDIX 4**

The script below is an example of what would be said during the debriefing. Because of the natural variation in conversation, the actual utterances may vary. However, the key ideas expressed in this example will be present in every variation on the script.

### **SAMPLE SCRIPT FOR DEBRIEFING SUBJECTS AFTER THE EXPERIMENT**

This research has to do with learning how to form words, like we learn how to combine “bird” and the plural “s” to talk about more than one bird in English. Past research has shown that some methods of forming words are difficult to learn, even though they exist in some of the world’s languages. We believe that this means that those word formation patterns do not get adopted by other languages, and this might be because it is difficult for adults to learn.

In this task, you listened to some made-up words and had to respond to them. You may have been asked if you recognized a word, or you may have been asked to create a new word based on familiar patterns. When you do this, you are tapping into your own word formation processes, and your ability to do this shows how well you were able to learn this made-up language in a very short time.



## Appendix 5

This questionnaire will be adapted for the Arabic and English speaking groups. The same questions will be asked, but will not be asked about Maltese specifically for the other two language groups.

### LANGUAGE BACKGROUND QUESTIONNAIRE

Please answer the following questions about your language background.

1. What is your occupation?

\_\_\_\_\_

In which town or region did you grow up? \_\_\_\_\_

In which town or region do you now live? \_\_\_\_\_

What language(s) were spoken often in the home where you grew up? (In this and subsequent questions, if you tick multiple languages, please specify the approximate percentage of time applicable to each language. For instance, if Maltese was spoken most of the time in your childhood home, but some English was also spoken, you could indicate Maltese: 90% and English: 10%)

Maltese \_\_\_\_\_%

English \_\_\_\_\_%

Other (please specify) \_\_\_\_\_%

What type of primary school did you attend?

State \_\_\_\_\_

Church \_\_\_\_\_

Private \_\_\_\_\_

What was the primary language spoken in this school? Please indicate all that apply.

Maltese \_\_\_\_\_%

English \_\_\_\_\_%

Other (please specify) \_\_\_\_\_%

What type of secondary school did you attend?

State \_\_\_\_\_

Church \_\_\_\_\_

Private \_\_\_\_\_

What was the primary language spoken in this school? Please indicate all that apply.

Maltese \_\_\_\_\_%

English \_\_\_\_\_%

Other (please specify) \_\_\_\_\_%

Did you attend university?

- No
- Yes

Please list number of years attended \_\_\_\_\_

Highest degree obtained \_\_\_\_\_

Course of study \_\_\_\_\_

If your university training was in a country other than Malta, please specify the institution and languages used: \_\_\_\_\_

In which language(s) do you usually speak to the following people?

Father \_\_\_\_\_

Mother \_\_\_\_\_

Grandparents \_\_\_\_\_

Siblings \_\_\_\_\_

Children \_\_\_\_\_

Friends \_\_\_\_\_

Co-workers \_\_\_\_\_

Customer/clients/other business contacts \_\_\_\_\_

In which language(s) are the newspapers and magazines you read regularly?

Maltese \_\_\_\_\_%

English \_\_\_\_\_%

Other (please specify) \_\_\_\_\_%

In which language(s) are the television programs you watch regularly?

Maltese \_\_\_\_\_%

English \_\_\_\_\_%

Other (please specify) \_\_\_\_\_%

Please list all languages you speak and rate your overall proficiency in each:

Maltese:                      Excellent      Good              Fair              Poor

English:                      Excellent      Good              Fair              Poor

Other \_\_\_\_\_:      Excellent      Good              Fair              Poor

Other \_\_\_\_\_:      Excellent      Good              Fair              Poor

Other \_\_\_\_\_:      Excellent      Good              Fair              Poor

What is the longest period of time you have spent continuously outside of Malta?

Never been outside Malta \_\_\_\_\_

One week or less \_\_\_\_\_

Less than one month \_\_\_\_\_

Two to five months \_\_\_\_\_

Six months to a year \_\_\_\_\_

Longer than one year \_\_\_\_\_

Which language(s) did you use most during this absence? \_\_\_\_\_

On average, how much time do you spend outside of Malta per year?

None

One week or less \_\_\_\_\_

Less than one month \_\_\_\_\_

Less than six months \_\_\_\_\_

More than six months \_\_\_\_\_

Which language(s) do you use most during these absences?

\_\_\_\_\_