

Examples of strong Small Grants Proposals

What follows are sections from the Small Grants Reviewers reference manual. The first is the Proposal Review Form and it lists six writing tasks that normally need to be accomplished in a research proposal. These tasks serve to explicate the three main criteria of the Small Grants Program, and, as reviewers are reading proposals, they determine whether these tasks have been completed.

The second section is a Strong Faculty Proposal. This proposal did receive Small Grant funding, and it demonstrates many examples of completing the six writing tasks at various places in the proposal. The numbers in the marginal comments indicate the number of the writing task, as it appears on the Proposal Review Form, that is related to the identified segment of text. The letters simply indicate the order of each identified segment of text in the proposal, and are included to facilitate discussion if desired.

The third section below is an example of a Strong Student Proposal. It too has segments of text identified that relate to the six writing tasks. Here, however, the identity of each writing task is postponed until the end of the proposal, and this gives you a chance to test your understanding of the match between the writing tasks and specific segments of text in the proposal. You can then check yourself with the answers considered correct.

**Small Grants Program
Proposal Review Form**

Project Title: _____

Investigator: _____

Reviewer: _____ Date Needed: _____

Indicate the need for a response from the investigator by circling one of the options (None, Some, or Significant) next to the task. Where a response is called for, provide narrative comments that guide the investigator. Select one Summary Judgment Recommendation from among those at the bottom of the page and forward your decision along with any narrative comments. Keep this form for your records.

Tasks		Need for response (circle one)
Criterion 1: Clear research question or purpose		
1	Clearly states a narrowed research question or purpose that is maintained throughout the proposal.	None Some Significant
2	Defines terms needed to understand the research question or its significance.	None Some Significant
Criterion 2: Significant research question		
3	Presents literature, theory, or logic that forms the context of the question and gives rise to the statement of significance.	None Some Significant
4	Explains how the project will contribute to the field.	None Some Significant
Criterion 3: Effective research methods		
5	Demonstrates that the methodology addresses the research question by (a) defining/delineating key elements of the methodology, (b) explaining their logic, and/or (c) defending their quality or effective prior use.	None Some Significant
6	Explains the feasibility of carrying out the research methods.	None Some Significant

Summary Funding Recommendation
(Circle a single option)

1	Fund in present form.	2	Fund pending response from investigator.	3	Unable to determine funding without review of a re-submitted proposal.
---	-----------------------	---	--	---	--

Manual Section II: A Strong Faculty Proposal

Notation system used in annotations

1. Marginal comments designate the beginning of segments, and, for extended segments, their ends.
2. Letters serve to identify each segment within the series of segments in the proposal.
3. Numbers indicate the criterion-related writing task that the segment addresses, as indicated on the Proposal Review Form (Preceding page).
4. Within the body of the text, each target segment is bounded at the beginning and end by the same letter-number combination.

A.1Effect of Tail Loss on Swimming and Running Abilities of Semi-Aquatic and Terrestrial Plethodontid SalamandersA.1

Project Summary

B.2Tail autotomy is the ability to lose the tail when grasped by a predator. B.2
C.4Although such tail loss has an immediate survival benefit, it might subsequently reduce fitness by affecting locomotion. C.4 I will study the effect of tail loss on running and swimming abilities of several salamander species. D. 5 The species represent a continuum from fully terrestrial to almost fully aquatic; thus, they will be good models to use to examine whether tail autotomy may be a more beneficial strategy for terrestrial species than for aquatic species. D.5 E. 4Such information will provide additional insight into the ecology and evolution of tail autotomy in vertebrates. E.4

leonard.kelly 12/1/04 1:38 PM

Comment: A.1

leonard.kelly 12/1/04 1:38 PM

Comment: B.2

leonard.kelly 12/1/04 1:38 PM

Comment: C.4

leonard.kelly 12/1/04 1:38 PM

Comment: D.5

leonard.kelly 12/1/04 1:38 PM

Comment: E.4

Proposal Narrative

Effect of Tail Loss on Swimming and Running Abilities of Semi-Aquatic and Terrestrial Plethodontid Salamanders

Introduction

Tail autotomy is the ability to lose or shed the tail when grasped by a predator. F. 3 Numerous lizards (Bellairs and Bryant 1985) and salamanders (Maiorana 1977, Ducey and Brodie 1983) use autotomy of the tail to avoid predation. It is often used when other anti-predator behaviors (e.g., fleeing, crypsis) have failed. Although such tail loss has an immediate survival benefit, it might subsequently reduce fitness for the individual (Arnold 1988). Because the tail contains fat reserves, regeneration of the tail may require an increase in feeding rate (Dial and Fitzpatrick 1981) or diversion of energy from growth (Ballinger and Tinkle 1979) and reproduction (Martin and Salavador 1993). In several species of lizards and salamanders, tailless individuals are less successful in avoiding predation (Congdon *et al.* 1974, Ducey and Brodie 1983, Wilson 1992). Individuals may compensate for this disadvantage by relying on crypsis (Formanowicz *et al.* 1990) or altering use of microhabitats (Martin and Salvador 1992).

Tail loss may also alter individual fitness by affecting locomotion. In lizards, tail loss can either hinder or enhance locomotor abilities. The effect in a given species may depend on whether the tail is functionally active or passive during locomotion (Vitt *et al.* 1977). In species with tails that contribute to locomotion, tail loss decreases sprint speed (Ballinger *et al.* 1979, Punzo 1982, Arnold 1984, Mushinsky and Gans 1992, Martin and Avery 1998). Tail loss may have no effect (Huey *et al.* 1990, Hamley 1990) or increase sprint speed (Daniels 1983, Brown *et al.* 1995) in species that do not use their tail for

leonard.kelly 12/1/04 1:38 PM

Comment: F.3 Continues to next page

locomotion.

Sexual and seasonal differences in frequency of tail autotomy (Arntzen 1994) and aspects of tail development and regeneration through the life cycle (Vaglia et al. 1997) have been examined in some salamanders. Whereas the potential costs of tail autotomy for respiration (Smits and Brodie 1995), social interactions (Wise and Jaeger 1998, Meche and Jaeger 2002), and some anti-predator behaviors (Labanick 1984, Ducey et al. 1993) have been studied in salamanders, F.3 G.4 the effect of tail loss on the locomotor abilities has not been examined. G.4 H.1 I will study the effect of tail loss on the running and swimming abilities of terrestrial and semi-aquatic plethodontid salamanders. H.1 In salamanders, the tail is required for swimming but may not be needed for running. I.5 Therefore, I predict that tail loss will reduce aquatic sprint speed, but will increase or have no effect on terrestrial sprint speed. If this occurs, it would indicate that tail autotomy may be a more beneficial anti-predator strategy for terrestrial species than for semi-aquatic species. I.5 Thus, I will also compare the propensity for tail loss among semi-aquatic and terrestrial species. J.4-5 Because recent phylogenies are available for these species, I can use the comparative method (Felsenstein, 1985) to determine if any differences between semi-aquatic and terrestrial species are adaptive or simply reflect phylogenetic differences. J.4-5 I am requesting the funds that are needed to collect and feed animals for one of the species that I will test in this study.

leonard.kelly 12/1/04 1:38 PM

Comment: F.3 End of segment

leonard.kelly 12/1/04 1:38 PM

Comment: G.4

leonard.kelly 12/1/04 1:38 PM

Comment: H.1

leonard.kelly 12/1/04 1:38 PM

Comment: I.5 explains logic

leonard.kelly 12/1/04 1:38 PM

Comment: J.4 and 5

Methods

I will collect Black-bellied salamanders (*Desmognathus quadramaculatus*) from southwestern North Carolina (Cherokee Co.) during August or September 2003. K. 5 Individuals will be captured by turning rocks in a stream bed and chasing them into a

leonard.kelly 12/1/04 1:38 PM

Comment: K.5 delineate

small fishing net. K.5 L.5 This capture method should not produce a biased sample in terms of the locomotor abilities of individuals. L.5 I will measure snout-vent length (SVL; measured to posterior angle of vent), total length (TL) and body mass (M_b) of each individual. Experiments will be conducted between 1 October and 30 November 2003. Prior to experiments, I will maintain salamanders at 16°C and on an LD 12:12 photoperiod for at least two weeks. Salamanders will be fed redworms (*Eisenia foetida*), but will not be fed for 3 days prior to each test. M.5 Collection, handling, housing, and maintenance of animals will follow the *Guidelines for Use of Live Amphibians and Reptiles* used by ASIH, HL, and SSAR. At the completion of the study all salamanders will be returned to their original site of capture. M.5

leonard.kelly 12/1/04 1:38 PM

Comment: L.5 defend

I will measure the locomotor performance of 24 salamanders with complete tails in a racetrack (1.3 m length, 6 cm width, 6 cm height) under both aquatic and terrestrial conditions at 16°C (with at least three days between these two experimental treatments).

leonard.kelly 12/1/04 1:38 PM

Comment: N.5 Effective prior use

N. 5 Previous research indicates that this sample size is appropriate for experimental studies on salamander locomotion (Marvin 2003). N.5 O. 5 For each treatment, I will conduct three trials per individual with at least one day between trials. For each individual, only the trial with the greatest speed will be used in the analysis. For aquatic tests, the racetrack will be filled with water to a depth of 2.0 cm. For terrestrial tests, I will line the bottom of the racetrack with a layer of moist paper towels. I will induce locomotion by tapping the tail with a blunt pencil. Experiments will be conducted at the same time of day and under standard conditions of light to avoid possible diel and photophasic effects. A Sony® camcorder (model CCD-TRV75) will provide visual records of each trial. O.5

leonard.kelly 12/1/04 1:38 PM

Comment: O.5 delineates

leonard.kelly 12/1/04 1:38 PM

Comment: O.5 End of segment

Section III: A Strong Student Proposal

Instructions: Test yourself by deciding which of the six criterion-related writing tasks is addressed by each identified segment of text. Answers appear at the end of the proposal.

LANGUAGE INTERACTION IN BILINGUAL-BIMODALS

PROJECT SUMMARY

A. The frequent diagnosis of hearing, signing children with language problems and the dearth of research in the area of bilingual-bimodal code mixing necessitate a detailed description of language interaction in this group. **A.** To achieve this goal, three to five hearing children ages 2;0—3;0 who are simultaneously acquiring American Sign Language and spoken English will be video-recorded interacting with their parents. Data will be transcribed, coded, and analyzed to answer the following questions: **B.** At what rate/s do bilingual-bimodals code mix? What types of mixing occur? What variables effect mixing? Does mixing contribute to the perception of deviant language production in this population? **B.**

leonard.kelly 12/1/04 1:38 PM

Comment: A.

leonard.kelly 12/1/04 1:38 PM

Comment: B.

PROPOSAL NARRATIVE

C. The phenomenon of code mixing has been documented in nearly all developmental studies of bilingual children simultaneously acquiring two or more spoken languages (see Genesee, 1989 & De Houwer, 1995 for reviews). **D.** It has been defined as “the co-occurrence of elements from two or more languages in a single utterance” (Genesee, 1989, p. 162). It has been similarly termed language mixing, language interaction, language transfer, and language interference. **D.** It is, furthermore, of considerable interest to researchers and professionals concerned with bilingual language

leonard.kelly 12/1/04 1:38 PM

Comment: C. Continues next page

leonard.kelly 12/1/04 1:38 PM

Comment: D.

acquisition as, state Paradis, Nicoladis, and Genesee (2000), “the function and form of bilingual children’s code-mixing can be considered informative of their developing linguistic knowledge” (p. 245).

Historically, code mixing was seen as an anomalous behavior, proof that exposing young children to more than one language resulted in delay and confusion (Leopold, 1939-1949; Ronjat, 1913). It has also been cited as evidence that bilingual children initially possess a unitary, undifferentiated underlying language system (Volterra & Taeschner, 1978; Swain, 1977). Currently, researchers recognize code mixing as a normal process in bilingual language acquisition and offer various explanations for the phenomenon, including parental input (Goodz, 1989) and language gaps or dominance (Genesee, Nicoladis, & Paradis, 1995).

Of further interest to researchers are patterns of similarity and difference across groups of language learners. For example, investigators have found that bilingual children acquiring a range of different languages mix phonological (individual sounds), morphological (grammatical markers), syntactic (word order and structure), semantic (words and meanings), and pragmatic (function and use) elements in their early utterances. Furthermore, code mixing appears to decline with age and often ceases between the ages of three and four (Fantini, 1978; Redlinger & Park, 1980; Vihman, 1982; Volterra & Taeschner, 1978). However, individual rates of mixing vary widely as a function of age, setting, interlocutor, and child. This is patently illustrated by Petitto and colleagues (2001) who report that the mixing rates of their six subjects varied throughout the study from one to 66%. C.

E. Despite the corpora of data researchers have amassed about code mixing in young

leonard.kelly 12/1/04 1:38 PM

Comment: C. End of segment

leonard.kelly 12/1/04 1:38 PM

Comment: E.

bilinguals, very little is known about the mixing patterns of bilingual-bimodal children, or children acquiring both a signed and a spoken language. Anecdotal evidence suggests that code mixing occurs in this population (Griffith, 1985; Petitto et al., 2001; Prinz & Prinz, 1981; Richmond-Welty & Siple, 1999). However, the vast majority of investigations have focused on polyglot children acquiring two or more spoken languages, and researchers have yet to address the specific mixing patterns of bilingual-bimodals.E.

The dearth of research in this area is unfortunate because, Petitto et al. (2001) explain, “modality differences between the hands and the tongue offer a unique test of existing hypotheses” (p. 490). More critical, perhaps, is the lack of research when one considers the nature of the literature available regarding language acquisition in bilingual-bimodals. Seal and Hammett (1995) reveal that most studies concerned with language development in hearing, signing children “focus on the delayed onset and subsequent disorder of spoken language” (p. 15). In particular, Schiff and Ventry (1976) find a prevalence of communication disorders among their 52 subjects, including (but not limited to) impairments of word finding, language comprehension, pronoun usage, vocabulary development, fluency, prosody, and phonological acquisition. Too, Murphy and Slorach (1983) report deviant syntactic patterns in their six subjects, while Johnson, Watkins, and Rice (1992) conclude their subject’s simultaneous acquisition of American Sign Language (ASL) delayed his development of English morphological structures.

Delay and disorder do not likely typify the language development of hearing children acquiring sign and speech. Select studies refute the aforementioned findings (Holmes & Holmes, 1980; Mayberry, 1976; Petitto et al., 2001; Newport & Meier, 1985).

Moreover, researchers have failed to consider the role of code mixing in explaining the “deviant” linguistic patterns they have observed.

F. As a result of the paucity of research in this area, the current study seeks to systematically analyze and describe code mixing as it occurs in a group of young bilingual-bimodals. Specifically, the study seeks to answer four extant questions: At what rate/s do bilingual-bimodal children code mix? What types of mixing occur when an oral and manual language interact? Might the variables of parental input and/or language dominance contribute to bimodal mixing? Does code mixing itself contribute to the perception of deviant language development in bimodal children? **F.**

leonard.kelly 12/1/04 1:38 PM
Comment: F.

To address these questions, three to five normally developing hearing children who are simultaneously acquiring American Sign Language and spoken English from one Deaf and one hearing parent will be selected to participate in the study. **G.** Additionally, because code mixing is essentially a combinatorial language process that is reported to decline after age three, the children must be between the ages of 2;0—3;0 with a Mean Length of Utterance (MLU)¹ of at least two morphemes (2.0). **G.**

leonard.kelly 12/1/04 1:38 PM
Comment: G.

In order to collect a language sample, the primary investigator will videotape each child playing with his or her parents at home during three one-hour sessions. The first session will include the child and both parents. The last two sessions will involve the child and one parent, so that subjects can be observed interacting with each parent

¹ It is acknowledged that employing MLU as a measure of morpho-syntactic complexity in ASL is problematic. ASL is noted to incorporate a number of grammatical morphemes within signs rather than affixing them to signs, so that the simultaneous nature of these productions may lead to the erroneous conclusion that an ASL utterance is not as “long” and therefore not as complex as an equivalent English utterance. Despite this complication, researchers commonly employ MLU in studies of young signing children in the absence of a more appropriate measure (Prinz & Prinz, 1981; Richmond-Welty & Siple, 1999). As will be the case in the current study, researchers adjust for the simultaneous nature of signs by including in their calculations those “incorporated” morphemes that are used productively.

individually. Parents will be instructed to play and communicate with their child as they normally would. Parents will also be asked to complete a questionnaire soliciting background information such as their hearing status and communication preferences, gross motor and language developmental milestones of the child, and communication patterns at home.

H. Trochim (2001) maintains that the methodological approach of direct observation (such as that described above) is particularly effective when a researcher wishes to observe naturalistic interactions but does not wish to participate in a context. However, Polit, Beck, and Hungler (2001) caution that direct observation may result in “reactivity” on the part of subjects who alter their behavior when they are aware of being observed (p. 280). Three measures are taken to alleviate this possible confound in the current study.

H. First, subjects will be taped in the familiar setting of their homes, with equipment and observer positioned unobtrusively. Second, the primary investigator will spend the initial session familiarizing subjects with the protocol, so that parents and children will be recorded, but the data will not be included in analysis. Third, the first five minutes of the last two sessions with each family will be excluded from analysis to allow subjects time to re-acclimate to the recording procedure.

As data collection is completed, the videotapes will be transcribed in accordance with CHAT (Codes for Human Analysis of Transcription) format (MacWhinney, 2000). CHAT is a standard system for transcribing child language data. It allows for the inclusion of key contextual information for understanding communicative intent and

leonard.kelly 12/1/04 1:38 PM
Comment: H.

provides guidelines for transcribing code-mixed and sign-language utterances² (MacWhinney, 2000).

Next, language transcripts will be coded. Parent and child utterances will be coded as mixed if, in a single utterance, both ASL and English elements appear. Such elements may be phonologic, morphologic, syntactic, semantic, or pragmatic in nature and may be used in combination (sequential mixing) or in conjunction (simultaneous mixing). In addition, child utterances will be coded according to their target-like status. **I.** Specifically, an utterance will be identified as non-target-like if it is deemed, by a native speaker of the language, to violate principles governing the form, content, and use of that language. **I.** Non-target-like constructions may include normal, developmental errors (using a simpler handshape in a sign or sound in a word) and errors of a type not expected, possibly due to an interaction between the child's two languages (using the ASL strategy of word reduplication to express plurality in English).

leonard.kelly 12/1/04 1:38 PM

Comment: I.

Subsequent to transcription and coding, the data will be analyzed. First, MLU, Multi-Morphemic Utterance (MMU), and Upper Bound Utterance Length (UB) scores will be calculated for each child to determine the morpho-syntactic complexity of their utterances. Each of these scores will be calculated separately for ASL and English to determine if the child is dominant in or shows preference for one over another language. Second, the percentage of mixed utterances for each child will be calculated overall and for each language. Particular attention will be paid to identifying types of mixes (phonological, morphological, syntactic, semantic, pragmatic) the children have produced, and obvious patterns will be noted. Third, the percentage of mixed utterances

² The Berkeley Sign Language Acquisition Project has designed a system for transcribing sign language data in CHAT format, which is included and referenced in the CHILDES manual (MacWhinney, 2000).

will be calculated for each parent, and comparisons made with their child's data. Finally, the percentage of non-target-like utterances for each child will be calculated (total and for each language); those utterances will then be analyzed to determine whether or not code mixing accounts for the violations. **J.** Specifically, if an error that was identified in one language is deemed an acceptable construction in the other language, the violation will be considered the result of a code mix. **J.**

leonard.kelly 12/1/04 1:38 PM

Comment: J.

In order to determine the reliability of transcribed and coded utterances, a native user of both ASL and spoken English (subsequent to training by the primary investigator) will independently transcribe and code the data from each session, the results of which will be compared to the primary investigator's transcripts. Inter-judge reliability scores will be computed.

K. Transcripts will be judged reliable if researchers transcribe and code utterances with 85% agreement. **K.** Disagreements in English transcription will be resolved through discussion; however, the primary investigator will defer to the native ASL user in instances of conflicting ASL transcription. Similarly, disagreements in coding mixed and non-target-like English productions will be resolved through discussion, while the native ASL user's judgment will prevail in assigning non-target-like status to signed utterances.

leonard.kelly 12/1/04 1:38 PM

Comment: K.

L. In conclusion, little information is currently available regarding the phenomenon of code mixing in bilingual-bimodal children. The lack of information poses a significant problem for professionals working with this population, as bimodal development may not parallel that of monolingual children acquiring sign or speech. A systematic analysis of code mixing in children acquiring ASL and English will then contribute to existing data and provide a foundation for future research. It will further contribute to the growing

leonard.kelly 12/1/04 1:38 PM

Comment: L.

body of literature on the acquisition, development and processing of natural sign languages. Most importantly, however, the current study will aid researchers and professionals in working with bilingual-bimodal children by detailing relevant language processes and patterns they may exhibit.L.

Tasks Related to Each lettered Segment

A. 4

B. 1

C. 3

D. 2

E. 4

F. 1

G. 5 defines and explains logic

H. 5 delineates and defends effective prior use

I. 5 defines

J. 5 defines

K. 5 defines

L. 4