Appendix A

List of words replaced with non-words

Deep Water		Forests		Fresh Water		Mountains	
1K							
fish	spauls	animals	shreaves			heart	trad
happens	claults	birds	threbs			feed	framb
		cats	knults			head	crith
		bird	threb			cleaning	speeving
		birth	sturd			fingers	splims
		cat	knult			formed	roxed
2K							
snakes	dweeks	pines	smends	streams	jaults	monkeys	troms
file	smork	female	fethrauns	giants	spuilts	bleeding	spleking
bumps	dwulbs	males	thrauns	upper	spoint	specific	phlork
cracks	bloms	mating	prubbing	advantages	strooths	avoid	scobe
males	thrauns	pins	rinths	competition	thwilm	benefit	scrake
tiny	scrarmy	seeds	sploots	contains	shaints	brushing	gnubing
battle	dwourth	sharp	blinched	creating	nonzing	challenge	scrang
bite	squoit	activity	phleign	creatures	suilds	chat	plom
centimeters	bruts	battle	stround	current	trenth	cliffs	groids
chase	filk	bitter	preafed	detect	thelch	constantly	vonkly
common	frolve	concentration	scabe	develop	thwin	creatures	suilds
contain	shaint	creatures	suilds	dine	smish	entirely	piltly
demands	tweevs	fruits	scrots	drag	flarv	equipment	flect
electric	broud	gathered	flinged	energy	twoal	fruit	asgrots
escaping	shrufting	impress	flaist	fans	preaves	guard	brib
extreme	reld	loss	phram	firmly	crirstly	heights	gwilks
females	fethrauns	neither	glith	flow	blurve	monkey	trom
flash	dwaf	northern	thwoff	flowing	blurving	opposed	spret
flashes	dwaves	patch	dwerge	giant	spuilt	organizations	cleezation

marvelous	spleel	pine	smend	harmfulness	dreachness	partnership	flectship
observed	phipped	produce	pilm	hooks	twates	patch	dwerge
partnership	smurts	rare	spane	jaw	nact	rare	zoast
percent	groll	reduces	wulches	limited	skelked	remarkable	prawlable
seek	scrabe	scales	blarbs	melt	gnuked	risky	slaify
skills	thructs	search	kaft	meters	floals	schedule	blulp
varied	smalked	seasonal	psemtional	poison	spround	social	grule
victims	kenths	seasons	psempts	polluted	knonked	survive	durk
warning	snith	soldiers	dwirds	pressure	trourg		
		species	sleens	provide	grank		
		spirits	sproughts	rapids	scarms		
		tongues	claze	reduce	psounce		
		valuable	throrched	select	phraith		
				species	shrerbs		
				stream	jault		
				survive	spreath		
				typically	bremsly		
				warning	linsing		

>2K

clams	stug	capercaillie	thweep	salamanders	thwams	ibex	brux
clam	stugs	moose	swomb	salamander	thwams	wildebeest	shrerbs
coral	smelm	oval	blane	bamboo	grome	insects	spleaths
paralyzes	phrilks	hormone	slawn	amphibian	shrarls	expert	brern
cooperation	sploke	terrifying	stirking	torrent	tryne	personality	gonkty
territorial	screeked	opponents	screrm	shrimps	splothes		
		substance	brelt	larvae	phraives		
				nutrients	dunds		
				sensors	brulps		
				oxygen	slup		
				particles	spreals		
				dominate	scooch		
				extract	thrave		

monsters   plolks

Appendix C

Analysis and Results

An additional analysis was carried out to examine the effect of lexical coverage levels, viz. 100%, 95%, 90% and 80%, and question types, i.e., audio-based and audio plus imagery-based questions, on viewing comprehension scores.

Table 1 shows that there is a visible downward trend in both types of questions and that scores from the audio and imagery-based questions are slightly higher.

Table 1: Descriptive statistics per coverage level for each type of question: audio (7 questions) and audio and imagery-based questions (7 questions) (N = 116).

	Coverage levels			
	100%	95%	90%	80%
Audio	5.52	5.30	4.94	4.62
Audio-imagery	6.13	5.91	5.74	5.58
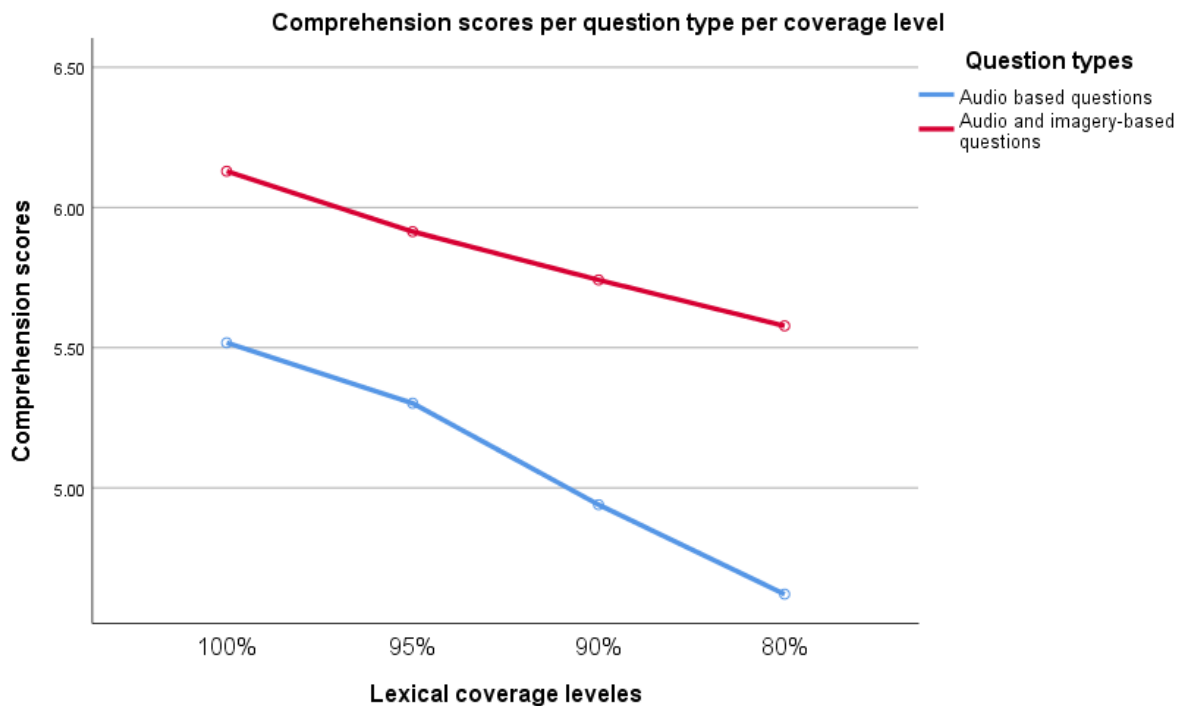
Figure 1. Comprehension scores divided into question types (7 questions) and lexical coverage levels

Analysis of the studentized residuals showed that data were not normally distributed, as assessed by the Shapiro-Wilk test of normality. Similarly, three outliers were found, as assessed by studentized residuals greater than ± 3 standard deviations. Although there were some violations of normality and outliers, a two-way repeated measures ANOVA was run, because with 116 participants the analysis should have been robust to violations of normality. Mauchly's test of sphericity indicated that the assumption of sphericity had been violated for the two-way interaction, $\chi^2(5) = 12.2$, $p = .032$. As a result, the Greenhouse-Geisser coefficient ($\varepsilon = .933$) was used to correct the two-way repeated measures ANOVA. Data are mean ± standard deviation, unless otherwise stated. Results showed that there was no statistically significant interaction between question types and lexical coverage levels on comprehension scores, $F(2.8, 321.79) = 1.58$, $p < .198$, partial $\eta^2 = .014$, as seen in Figure 1. Therefore, simple main effects were not run for the interaction between question types and lexical coverage levels. Instead, the main effects for the two within-subjects factors (i.e., the main effect for question type and the main effect for lexical coverage) were interpreted separately.

The main effect of question types showed a statistically significant difference in comprehension scores, $F(1, 115) = 88.31$, $p < .001$, partial $\eta^2 = .434$ between audio based ($M = 5.09$, $SD = $) and audio plus imagery-based ($M = 5.84$, $SD = $) questions with a mean difference of - .746 (95% CI, -.903 to - .589).

The main effect of lexical coverage levels showed that there was a statistically significant difference in comprehension scores, $F(2.91, 334.31) = 16.30$, $p < .001$, partial $\eta^2 = .124$ at the different levels of lexical coverage. Pairwise comparisons were performed with a Bonferroni adjustment for multiple comparisons to examine where the differences lied. Post hoc analysis revealed statistically significant differences in comprehension levels between 100% and 90%

coverage ($p < .001$), between 100% and 80% coverage ($p < .001$) and 95% and 80% ($p < .001$). All other comparisons were not statistically significant.

Although there was no interaction between question types and lexical coverage levels, we wanted to know whether there were significant differences within coverage levels at the two different question types. As data were not normally distributed, a Friedman test was run to determine if there were differences in comprehension scores at the four levels of lexical coverage for audio-based questions. Pairwise comparisons were performed (SPSS Statistics, 2012) with a Bonferroni correction for multiple comparisons. Statistical significance was accepted at the $p < .0167$ level (.05 divided into 3 for multiple comparisons). Comprehension scores were statistically significantly different at the different levels of lexical coverage, $\chi^2(3) = 33.253$, $p < .0005$. Post hoc analysis revealed statistically significant differences in comprehension levels from 100% ($Mdn = 6$) to 90% ($Mdn = 5$) ($p = .003$); 100% to 80% ($Mdn = 5$) ($p < .001$) and 95% ($Mdn = 5$) to 80% ($Mdn = 5$) ($p = .008$). All other combinations were non-significant.

A Friedman test was run to determine if there were differences in comprehension scores at the four levels of lexical coverage for audio plus imagery-based questions. Pairwise comparisons were performed (SPSS Statistics, 2012) with a Bonferroni correction for multiple comparisons. Statistical significance was accepted at the $p < .0167$ level (.05 divided into 3 for multiple comparisons). Comprehension scores were statistically significantly different at the different levels of lexical coverage, $\chi^2(3) = 18.845$, $p < .0005$. Post hoc analysis revealed statistically significant differences in comprehension levels from 100% ($Mdn = 7$) to 90% ($Mdn = 6$) ($p = .001$). All other combinations were non-significant.

Appendix D

Table 1. Reliability coefficients (Cronbach's α) at all coverage levels and total per playlist.

	N	100%	95%	90%	80%	Overall
Playlist A	26	.809	.626	.569	.429	.860
Playlist B	30	.618	.332	.614	.557	.844
Playlist C	31	.693	.671	.558	.447	.813
Playlist D	29	.417	.319	.511	.501	.697

Table 2. Reliability coefficients (Cronbach's α) per lexical coverage levels

Lexical coverage level	N	α
100%	116	.682
95%	116	.493
90%	116	.545
80%	116	.469

Table 3. Reliability coefficients (Cronbach's α) per topic at all coverage levels

Topic	N	α
Deep Water	116	.614
Forest	116	.641
Fresh Water	116	.597
Mountains	116	.526

Appendix E

Questions in English

1. Why do the Indonesian coral areas contain such varied life? (audio)
a. Because of their vegetation.
b. Because of their minerals.
c. Because of their temperature.
d. Because of their location.
e. I don't know.

2. Why does the presenter say that "everything demands a closer look"? (audio-imagery)
a. Because things are not what they seem.
b. Because things are small.
c. Because things are transparent.
d. Because things are fast.
e. I don't know.

3. Why can those sea horses not be noticed? (audio-imagery)
a. Because they are too quiet.
b. Because they are too fast.
c. Because they are too small.
d. Because they are too shy.
e. I don't know.

4. How are the sea horses settling territory? (audio-imagery)
a. Dancing an intimidating dance.
b. Hunting the biggest prey.
c. Marking territory with urine.
d. Hitting against each other.
e. I don't know.

5. What does the presenter say about the clams' sex? (audio)
a. That they have sex only to procreate.
b. That they are born sexless.
c. That they all have the same sex when born.
d. That they live with both sexes.
e. I don't know.

6. What is the purpose of the clam's electric flash? (audio)
a. The purpose is to electroshock fish.
b. The purpose is not clear.
c. The purpose is to attract fish.
d. The purpose is to frighten away fish.

e. I don't know.

7. Why can't snakes catch fish by themselves? (audio)
a. Because they can't swim straight.
b. Because they can't fit in small places.
c. Because they can't move fast.
d. Because they can't swim deep.
e. I don't know.

8. How do snakes hunt? (audio-imagery)
a. They look for eggs on land.
b. They eat what other creatures leave.
c. They eat the fish that are in the coral.
d. They seek the weakest fish.
e. I don't know.

9. Why do snakes not eat fish from a group of fish? (audio)
a. Because they cannot catch them.
b. Because they can be attacked.
c. Because they are disoriented.
d. Because they cannot see clearly.
e. I don't know.

10. How do snakes attack their prey? (audio)
a. They strangle them.
b. They chase them.
c. They electroshock them.
d. They immobilize them.
e. I don't know.

11. Why do snakes not hunt alone? (audio-imagery)
a. Because they do not see clearly.
b. Because they need the help of other fish.
c. Because they do not fit in the coral.
d. Because they are in danger.
e. I don't know.

12. How do goldfish and Tri-valley help the snakes catch the fish? (audio-imagery)
a. They lead the prey to small places.
b. They catch the prey for the snakes.
c. They paralyze the fish, so that the snakes catch them.
d. They hide in small places to catch the fish.

e. I don't know.

13. How do the goldfish and Tri-valley benefit from hunting with the snakes? (audio-imagery)
a. They eat the remains that the snakes leave.
b. They catch the fish that escape from the coral.
c. They eat the eggs of the snakes.
d. They eat together with the snakes inside the coral.
e. I don't know.

14. Why is it now difficult to observe the fish-snake teamwork? (audio)
a. Because the corals are extinct.
b. Because sunlight does not reach the corals.
c. Because the fish and the snakes are almost extinct.
d. Because most of the corals have deteriorated.
e. I don't know.

Audio: 7

Audio-imagery: 7

Video: 2'23''

Forests questions

1. Why are some animals considered like 'spirits'? (audio-imagery)
a. Because they do not eat for long periods.
b. Because they are hardly ever seen.
c. Because they do not make any noise.
d. Because they do not leave footprints.
e. I don't know.

2. Why may the wild cat walk hundreds of miles? (audio)
a. To find food.
b. To find water.
c. To find shelter.
d. To find other cats.
e. I don't know.

3. Why may the wild cat never walk in the same place twice? (audio)
a. Because they mark the territory.
b. Because they like new places.

c. Because they must walk long distances.
d. Because they get lost.
e. I don't know.

4. Why is life hard for the hunters? (audio)
a. Because there are too many predators
b. Because there are not many animals
c. Because the forest is dangerous.
d. Because the other animals attack them.
e. I don't know.

5. Why is there a lack of animals in the forest? (audio)
a. Because the animals cannot eat the food available.
b. Because there are too many predators.
c. Because there is no vegetation.
d. Because the food is of low quality.
e. I don't know.

6. How can moose survive? (audio-imagery)
a. They have reserves.
b. They hibernate.
c. They eat what other animals leave.
d. They eat pine leaves.
e. I don't know.

7. Apart from the moose, why do other animals not eat the pine needles? (audio)
a. Because other animals cannot reach them.
b. Because moose eat them all.
c. Because the needles are too sharp.
d. Because the needles are not nutritious.
e. I don't know.

8. Why are pine leaves filled with a sticky substance? (audio)
a. To make their needles longer.
b. To keep moisture.
c. To repel predators.
d. To remain green.
e. I don't know.

9. Which part of the pines can birds eat? (Audio-imagery)
a. The leaves
b. The branches.

c. The seeds
d. The bark
e. I don't know.

10. Where are the pine seeds located? (Audio-imagery)
a. In the leaves
b. In the pine fruits
c. In the trunk
d. In the bark
e. I don't know.

11. Which part of their body do birds use to open the pine fruits? (audio-imagery)
a. Their beak
b. Their head
c. Their tongue
d. Their claws
e. I don't know.

12. Which part of their body do birds use to extract the seeds from the pine fruits? (audio-imagery)
a. Their feet
b. Their head
c. Their tongue
d. Their claws
e. I don't know.

13. What is the birds' priority at the moment? (the birds that appear at the end) (audio-imagery)
a. Feeding their children.
b. Fighting for food.
c. Looking for food.
d. Finding a partner.
e. I don't know.

14. What did the study find about the birds at the end? (audio)
a. That they lose concentration.
b. That they make sounds to scare females.
c. That they impress the females only once.
d. That they have a change in their hormone levels.
e. I don't know.

Audio: 7
Audio-Imagery: 7
Video: 2'07''

Mountains

1. Why are mountain streams full of energy? (audio-imagery)
a. Because they produce energy.
b. Because they erode the rock.
c. Because they feed the rivers.
d. Because they are turbulent.
e. I don't know.

2. Which characteristic of the water in the upper reaches is mentioned in the video? (audio)
a. It is highly nutritious.
b. It is little contaminated.
c. It has bubbles.
d. It has low temperatures.
e. I don't know.

3. What is the consequence of water low in nutrients but high in oxygen? (audio)
a. Only small creatures can survive.
b. Creatures cannot absorb the nutrients.
c. Creatures need little food.
d. There is much more vegetation because there are no predators.
e. I don't know.

4. Why do only few creatures live in the torrent? (audio)
a. Because the water is cold.
b. Because the water has low nutritional value.
c. Because the current brings too many predators.
d. Because it lacks oxygen.
e. I don't know.

5. Why do creatures have to hang on for their lives? (audio-imagery)
a. Because they can be eaten by other creatures.
b. Because they don't want to go to the surface.
c. Because they can be dragged away by the water.

d. Because they have to eat creatures on the rocks.
e. I don't know.

6. Which animals are abundant in those upper reaches? (audio-imagery)
a. Animals with no bones.
b. Animals with no gills.
c. Animals with no hair.
d. Animals with no claws.
e. I don't know.

7. Why does the aquatic insect from the video have a flattened body? (audio-imagery)
a. To fit in small places.
b. To save energy.
c. To resist the torrent.
d. To maximize oxygen.
e. I don't know.

8. How do the black fly larvae resist the current? (audio-imagery)
a. They swim deep.
b. They use their flattened feet.
c. They use hooks.
d. They reduce drag with their claws.
e. I don't know.

9. What happens if the larvae's hook fail? (audio-imagery)
a. They get trapped in the vegetation.
b. They lose a part of their body.
c. They have a second option.
d. They roll over the rock.
e. I don't know.

10. What do shrimps do with their fans? (audio-imagery)
a. Sense their prey.
b. Catch food.
c. Make the water colder.
d. Distract predators.
e. I don't know.

11. According to the video, why do only small animals live in the streams? (audio)
a. Because the food is scarce.

b.   Because big animals cannot be underwater for long.
c.   Because big animals sink.
d.   Because big animals get frozen.
e.   I don't know.
12. What characteristic of the salamanders is mentioned by the presenter? (audio)
a.   They can't see clearly.
b.   They travel long distances.
c.   They can only eat fish.
d.   They live in groups.
e.   I don't know.
13. How do salamanders hunt? (audio)
a.   They use their sight.
b.   They use their touch sense.
c.   They use their tongues.
d.   They use sensors in their skin.
e.   I don't know.
14. Why does the presenter say that salamanders have no competition? (audio)
a.   Because they are the biggest animals.
b.   Because they are the fastest animals.
c.   Because they are the smartest animals.
d.   Because they are the laziest animals.
e.   I don't know.

Audio: 7

Audio-imagery: 7

Video: 2'14"

1.   Apart from the physical characteristics, what makes the monkeys perfect climbers? (audio)
a.   Their crazy personality.
b.   Their carefulness.
c.   Their sensibility.
d.   Their fearlessness.
e.   I don't know.

2.   Why do the monkeys have a head for heights? (audio)
a.   Because they are not afraid of heights.
b.   Because they climb carelessly.
c.   Because they are always trying to go higher.
d.   Because do not go to flat places.

e. I don't know.

3. What do monkeys do in the mornings? (audio-imagery)
a. Look for a partner.
b. Find food.
c. Have fun.
d. Clean each other.
e. I don't know.

4. Apart from grooming, what do monkeys meet for? (audio-imagery)
a. To find a partner.
b. To socialize.
c. To find a place to sleep.
d. To sunbathe.
e. I don't know.

5. What do these monkeys do differently than other monkeys while grooming? (audio)
a. They fight.
b. They sing.
c. They snuggle.
d. They talk.
e. I don't know.

6. What are the benefits of grooming according to the presenter? (audio-imagery)
a. Strengthen bonds.
b. Be clean.
c. Be relaxed.
d. Get to know other animals.
e. I don't know.

7. Why can't they socialize for a longer time? (audio)
a. Because they get tired.
b. Because they are already clean.
c. Because they have other things to do.
d. Because they can get sunburnt.
e. I don't know.

8. Why would other monkeys not survive in the mountains? (audio)
a. Because there is almost no food.
b. Because the weather is too cold.
c. Because there is almost no water.

d. Because the mountains are too high.
e. I don't know.

9. What makes the monkeys from the video different from other monkeys? (audio-imagery)
a. They can stand high temperatures.
b. They can live with other animals.
c. They can survive on grass.
d. They can eat insects.
e. I don't know.

10. Why are the monkeys from the video not like other monkeys? (audio-imagery)
a. Because they travel to find food.
b. Because they are permanently looking for a place to live.
c. Because they need large amounts of food.
d. Because they live in large groups.
e. I don't know.

11. Why does the presenter compare the monkeys with wildebeests? (audio)
a. Because they both socialize in the morning.
b. Because they both eat in groups.
c. Because they both migrate to higher places.
d. Because they both have hierarchies.
e. I don't know.

12. Why does the presenter say that we might expect that monkeys and ibexes avoided each other? (audio)
a. Because ibexes don't usually share with other animals.
b. Because monkeys are aggressive.
c. Because ibexes are rare creatures.
d. Because monkeys are not like other animals.
e. I don't know.

13. Why do Walia ibexes and the monkeys share a patch? (audio-imagery)
a. Because they hunt together.
b. Because they clean each other.
c. Because they play together.
d. Because they help each other.
e. I don't know.

14. In what form do the monkeys and Walia ibexes benefit each other? (audio-imagery)
a. Because when they are together, it is safer to eat.

b. Because when they are together, they can find more food.
c. Because when they are together, they can cover larger areas.
d. Because when they are together, they are both cleaner.
e. I don't know.

Audio: 7
Audio-imagery: 7
Video: 2'26''

https://drive.google.com/drive/folders/1Bqx4jkQ7q1mnq0vv27VzPAJGeOmPCvnK?usp=sharing