

# Polyphonic Instrument Background as Bias in Determining Harmony Aurally

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## ABSTRACT

Being able to determine chord progressions in popular songs is an important skill for educators and necessary to allow teachers to facilitate student-directed composition and performance. This skill is not tested on the music teacher certification Praxis examination and is not typically covered in undergraduate aural skills courses for music majors. The purpose of this research is to gain an understanding of how undergraduate and graduate music majors self-assess their ability to determine chord progressions in popular songs and the musical backgrounds associated with this assessment. The study examined associations among the responses given to the survey questions.

**Keywords:** Harmony, Determining Chord Progressions, Ear-training, Aural skills, polyphonic instruments, monophonic

## 1. INTRODUCTION

The ability to determine chords and progressions used in popular music is a valuable skill for musicians. Green (2008) outlines a performance strategy hinged on listening to music that is culturally familiar and learning to play the music informally “by ear” in the same way that many popular musicians have learned to perform (Green, 2002). In this strategy, music educators function as facilitators for student-directed learning; assisting with more complicated levels of musicianship when needed. However, listening to music on the radio and determining the chords and chord progressions can be a difficult task for most music educators let alone students. In order for Green’s pedagogy to be best utilized in practical applications, the educator facilitating the student-directed learning will need to be proficient at the skills used in determining chords and chord progressions by ear.

The Praxis teacher certification exam in music (ETS, 2010) administered by the Educational Testing Service, or ETS, must be passed in order to receive music teaching certifications credentials in most U.S. states. Although this test has a listening section, the questions asked do not directly assess the skills needed to determine harmony in the way that would best equip an educator looking to facilitate student-directed learning as described by Green.

The National Associations of Schools of Music, or NASM, handbook (2010) provides criteria for music courses as part of the accreditation process for colleges and universities. These criteria only present standards for traditional ear-training (aural skills) courses and, again, don’t directly address the aforementioned skills.

The burden of ensuring that music educators possess these skills is presumably left to the degree-granting institution and, likely, the specific ear-training courses offered and the variety in ear-training method books, pedagogies, supplemental software and media in use in higher education are far from consistent from

school to school. Curricular objectives regarding the individual ear-training skills being taught will also vary from school to school and course to course; one teacher may emphasize intervallic relationships or harmony in isolation while another may emphasize harmonic direction in the context of the standard repertoire of Western art music. It would seem that mastery of the skills necessary to determine popular music harmony in this way could vary from educator to educator as there is really no formalized way of assessing the extent to which a music education major possess this skill apart from other ear-training skills assessed within the ear-training courses.

An association between musicians proficient on a polyphonic instrument and an increased ability to determine chords and chord progressions over musicians proficient on a monophonic instrument was examined as this connection is absent from the literature. Since undergraduate content musicianship skills require some study of keyboard harmony by all music majors (NASM, 2010, p. 73), the study focused on the instrument types of music majors prior to college study.

Undergraduate and graduate music majors at a mid-sized state university in the northeast United States who had completed at least two semesters of ear-training courses and were familiar with popular music were studied. Participants were divided into two groups based on their experience playing monophonic or polyphonic instruments prior to college study. Participants in the “polyphonic group” needed to fit the criteria of having had at least 3 years of experience playing a polyphonic instrument and considered their level of proficiency with that instrument to be at least intermediate instrument prior to college study. All other participants who had only played monophonic instruments prior to college study were placed in the “monophonic group”.

Participants were asked a number of self-assessment questions related to their own skills in determining chord progressions in popular music and a possible association between the two groups was examined (see DATA section for more details).

## METHOD

N = 94 undergraduate and graduate music majors at a mid-sized state university in the northeast United States who had completed at least two semesters of ear-training courses and have listened to popular music. Participants were asked two qualifying “yes or no” questions to determine their eligibility to participate in the survey:

- 1) Have you passed at least 2 semesters of theory and at least 2 semesters of aural skills/ear training in your college career?
- 2) Have you ever listened to any popular or rock music that was played on the radio?

Of the 103 individuals who responded, only 100 fit the criteria to take the survey. Of this 100, 6 participants elected to not finish the survey. Data from the remaining 94 participants were used.

The first question divided the participants into two groups based on their experience playing monophonic or polyphonic instruments prior to college study. Participants in the "polyphonic group" identified themselves as having had at least 3 years of experience with a polyphonic instrument:

- 1) Piano or another keyboard instrument (like organ)
- 2) Guitar or another polyphonic string instrument (like harp)
- 3) Pitched polyphonic Percussion instrument (like marimba, xylophone)
- 4) Other polyphonic instrument and considered their level of musicianship to be at least intermediate with that polyphonic instrument prior to college study ranked on a 5-point Likert-type scale:

1) Very Weak, 2) Weak 3) Intermediate 4) Strong 5) Very Strong

All other participants who had only played monophonic instruments prior to college study were placed in the "monophonic group". All remaining questions with the exception of question 9 required a response on a 5-point Likert-type scale:

1) Very Weak 2) Weak 3) Moderate 4) Strong 5) Very Strong

Question 9 was an open ended question in which participants entered comments into a text box. This question and the results are listed at the end of the data below. A statistically significant association was found between both the polyphonic and monophonic groups for questions 3, 5, and 7.

## 2. RESULTS

The results suggest that there is a statistically significant variation between the abilities of both groups with the polyphonic group having had higher percentages in the "Very Strong, Strong, and Moderate" response categories with regard to their ability to choose chords to harmonize a primarily diatonic melody being performed live (question 3), determine the chord progression being used in a typical popular song on the radio (question 5), as well as compose a song such as one that might be played on the radio (question 7).

**Table 1**

Question 3

How would you rate your ability to, on-the-spot (i.e. "by ear"), choose chords to harmonize a primarily diatonic			
Frequency	Mono Group	Poly Group	Total
Percent			
Row Pct			
Col Pct			
Very Weak	1	3	4
	1.06	3.19	4.28
	25.00	75.00	
	3.33	4.69	
Weak	12	14	26

	12.77	14.89	27.66
	46.15	53.85	
	40.00	21.88	
Moderate	13	18	31
	13.83	19.15	32.98
	41.94	58.06	
	43.33	28.13	
Strong	3	22	25
	3.19	23.40	26.60
	12.00	88.00	
	10.00	34.38	
Very Strong	1	7	8
	1.06	7.45	8.51
	12.50	87.50	
	3.33	10.94	

**Table 2**

Question 5

How would you rate your ability to, by ear, determine the chord progression being used in a typical popular song on the radio? For example: "The chorus of this Journey song is a "I V vi IV" progression repeated 4 times"			
Frequency	Mono Group	Poly Group	Total
Percent			
Row Pct			
Col Pct			
Very Weak	3	1	4
	3.19	1.06	4.26
	75.00	25.00	
	10.00	1.56	
Weak	8	15	23
	8.51	15.96	24.47
	34.78	65.22	
	26.67	23.44	
Moderate	14	15	29
	14.89	15.96	30.85
	48.28	51.72	
	46.67	23.44	
Strong	5	20	25
	5.32	21.28	26.60
	20.00	80.00	
	16.67	31.25	
Very Strong	0	13	13
	0.00	13.83	13.83
	0.00	100.00	

0.00	20.31
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**Table 3**

Question 7

How would you rate your ability to compose a song such as one that might be played on the radio?			
Frequency	Mono Group	Poly Group	Total
Percent			
Row Pct			
Col Pct			
Very Weak	1	4	5
	1.06	4.26	5.32
	20.00	80.00	
	3.33	6.25	
Weak	11	11	22
	11.70	11.70	23.40
	50.00	50.00	
	36.67	17.19	
Moderate	15	19	34
	15.96	20.21	36.17
	44.12	55.88	
	50.00	29.69	
Strong	3	20	23
	3.19	21.28	24.47
	13.04	86.96	
	10.00	31.25	
Very Strong	0	10	10
	0.00	10.64	10.64
	0.00	100.00	
	0.00	15.63	

The responses for these three important questions were mixed. For example, in question 5, the responses of all participants when asked to rate their skills in determining, by ear, the chord progression being used in a typical popular song on the radio, were 4.26% "Very Weak", 24.47% "Weak", 30.85% "Moderate", 26.6% "Strong", and 13.83% "Very strong". Certainly, one could argue that the percentages in the "Weak" and "Very Weak" category, if not the "Moderate" category, are far too high for music majors.

Question 9 was an open-ended question about ways that participants went about determining chord progressions if at all. Among the responses given, many noted "picking them out" on guitar or piano.

According to question 10, most participants responded "Somewhat" or "Little" when asked if they felt their college music courses addressed skills necessary to determine the chord progressions used in popular songs on the radio. Determining chords and progressions could be something that players develop, perhaps out of necessity, apart from what is required in the

academy. Again, without the use of a polyphonic instrument as an aid, players of polyphonic instruments could have an advantage in this skill area than players of monophonic instruments.

**Table 4**

Question 10

Have your college music courses addressed skills necessary to determine the chord progressions used in popular songs on the radio?	
Frequency	Total
Percent	
Never	4 4.26
Little	26 27.66
Somewhat	47 50.00
Much	12 12.77
A great deal	5 5.32

**3. DISCUSSION**

Obviously, not all music majors, let alone music education majors, come from a polyphonic instrumental background. Although keyboard harmony courses are required in undergraduate degrees, the colleges, as previously mentioned, likely do not foster or develop the skills used in determining chords or chord progressions in popular music with the assistance of the student's primary instrument, be it polyphonic or monophonic, or a secondary keyboard instrument.

Based on the results of the previous study, one might conclude that musicians with a background in a monophonic instrument may have less opportunity to practice listening to music on the radio and determining the chords and progressions simply because of the monophonic limitation of their instrument. Since guitarists, keyboardists, and other players whose primary instrument is polyphonic deal with playing harmony on a regular and consistent basis, they may be more accustomed to hearing chords and progressions while they are performing them, and possibly had more experience determining chords and chord progressions using their instrument as an aid in the manner described above than monophonic players, even those who also play some keyboard or guitar as a secondary instrument.

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## 5. DATA

### Questions to Determine Groups

Type1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Brass Instrument (like trumpet, trombone, or tuba)	14	14.89	14	14.89
Guitar or another polyphonic string instrument (like harp)	7	7.45	21	22.34
Piano or another keyboard instrument (like organ)	9	9.57	30	31.91
Voice	26	27.66	56	59.57
Woodwind instrument (like flute, bassoon, or clarinet)	22	23.40	78	82.98
non-pitched or pitched monophonic Percussion instrument (like drums, cymbals, or timpani)	3	3.19	81	86.17
pitched polyphonic Percussion instrument (like marimba, xylophone,	1	1.06	82	87.23
primarily monophonic String instruments (like violin, viola, cello, bass, electric bass)	12	12.77	94	100.00

Frequency Missing = 6

Type2

Type2	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Brass Instrument (like trumpet, trombone, or tuba)	8	10.13	8	10.13
Guitar or another polyphonic string instrument (like harp)	16	20.25	24	30.38
Piano or another keyboard instrument (like organ)	19	24.05	43	54.43
Voice	12	15.19	55	69.62
Woodwind instrument (like flute, bassoon, or clarinet)	12	15.19	67	84.81
non-pitched or pitched-monophonic Percussion instrument (like drums, cymbals, or timpani)	2	2.53	69	87.34
pitched polyphonic Percussion instrument (like marimba, xylophone,	5	6.33	74	93.67
primarily monophonic String instruments (like violin, viola, cello, bass, electric bass)	5	6.33	79	100.00

Frequency Missing = 21

The FREQ Procedure

Type3

Type3	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Brass Instrument (like trumpet, trombone, or tuba)	1	2.04	1	2.04
Guitar or another polyphonic string instrument (like harp)	9	18.37	10	20.41
Piano or another keyboard instrument (like organ)	20	40.82	30	61.22
Voice	4	8.16	34	69.39
Woodwind instrument (like flute, bassoon, or clarinet)	9	18.37	43	87.76
non-pitched or pitched-monophonic Percussion instrument (like drums, cymbals, or timpani)	3	6.12	46	93.88
pitched polyphonic Percussion instrument (like marimba, xylophone,	1	2.04	47	95.92
primarily monophonic String instruments (like violin, viola, cello, bass, electric bass)	2	4.08	49	100.00

Frequency Missing = 51

Type4

Type4	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Guitar or another polyphonic string instrument (like harp)	4	22.22	4	22.22
Piano or another keyboard instrument (like organ)	5	27.78	9	50.00
Voice	2	11.11	11	61.11
Woodwind instrument (like flute, bassoon, or clarinet)	2	11.11	13	72.22
non-pitched or pitched-monophonic Percussion instrument (like drums, cymbals, or timpani)	1	5.56	14	77.78
primarily monophonic String instruments (like violin, viola, cello, bass, electric bass)	4	22.22	18	100.00

Frequency Missing = 82

The FREQ Procedure

Year1

Year1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
5 or more	83	98.81	83	98.81
less than 1	1	1.19	84	100.00

Frequency Missing = 16

Year2

Year2	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	4	14.29	4	14.29
2	6	21.43	10	35.71
3	10	35.71	20	71.43
4	8	28.57	28	100.00

Frequency Missing = 72

Year3

Year3	Frequency	Percent	Cumulative Frequency	Cumulative Percent
5 or more	22	91.67	22	91.67
less than 1	2	8.33	24	100.00

Frequency Missing = 76

Year4

Year4	Frequency	Percent	Cumulative Frequency	Cumulative Percent
5 or more	8	88.89	8	88.89
less than 1	1	11.11	9	100.00

Frequency Missing = 91

### Research Questions by Groups

Question 2. Compared to your peers, how would you rate your overall skills in music theory?

Q2(Q2)	group		
Frequency			
Percent			
Row Pct			
Col Pct	Mono	Poly	Total
Moderate	8	18	26
	8.51	19.15	27.66
	30.77	69.23	
	26.67	28.13	
Strong	16	28	44
	17.02	29.79	46.81
	36.36	63.64	
	53.33	43.75	
Very strong	4	15	19
	4.26	15.96	20.21
	21.05	78.95	
	13.33	23.44	
Weak	2	3	5
	2.13	3.19	5.32
	40.00	60.00	
	6.67	4.69	
Total	30	64	94
	31.91	68.09	100.00

Frequency Missing = 6

Statistics for Table of Q2 by group

Statistic	DF	Value	Prob
Chi-Square	3	1.5986	0.6597
Likelihood Ratio Chi-Square	3	1.6646	0.6448
Mantel-Haenszel Chi-Square	1	0.0643	0.7998
Phi Coefficient		0.1304	
Contingency Coefficient		0.1293	
Cramer's V		0.1304	

The FREQ Procedure  
Statistics for Table of Q2 by group

Fisher's Exact Test

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Table Probability (P)	0.0078
Pr <= P	0.6734

Effective Sample Size = 94

Frequency Missing = 6

Question 3. How would you rate your ability to, on-the-spot (i.e. "by ear"), choose chords to harmonize a primarily diatonic melody being performed live?

Q3(Q3)	group		
Frequency			
Percent			
Row Pct			
Col Pct	Mono	Poly	Total
Moderate	13	18	31
	13.83	19.15	32.98
	41.94	58.06	
	43.33	28.13	
Strong	3	22	25
	3.19	23.40	26.60
	12.00	88.00	
	10.00	34.38	
Very strong	1	7	8
	1.06	7.45	8.51
	12.50	87.50	
	3.33	10.94	
Very weak	1	3	4
	1.06	3.19	4.26
	25.00	75.00	
	3.33	4.69	
Weak	12	14	26
	12.77	14.89	27.66
	46.15	53.85	
	40.00	21.88	
Total	30	64	94
	31.91	68.09	100.00

Frequency Missing = 6

Statistics for Table of Q3 by group

Statistic	DF	Value	Prob
Chi-Square	4	9.8973	0.0422

Likelihood Ratio Chi-Square	4	10.8025	0.0289
Mantel-Haenszel Chi-Square	1	0.6409	0.4234
Phi Coefficient		0.3245	
Contingency Coefficient		0.3086	
Cramer's V		0.3245	

Fisher's Exact Test

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Table Probability (P)	4.538E-05
Pr <= P	0.0312

Effective Sample Size = 94

Frequency Missing = 6

**Question 4. How would you rate your ability to choose chords to harmonize a primarily diatonic melody written on staff paper?**

Q4(Q4)	group		
Frequency			
Percent			
Row Pct			
Col Pct	Mono	Poly	Total
Moderate	10	15	25
	10.64	15.96	26.60
	40.00	60.00	
	33.33	23.44	
Strong	15	25	40
	15.96	26.60	42.55
	37.50	62.50	
	50.00	39.06	
Very strong	2	17	19
	2.13	18.09	20.21
	10.53	89.47	
	6.67	26.56	
Very weak	0	1	1
	0.00	1.06	1.06
	0.00	100.00	
	0.00	1.56	
Weak	3	6	9
	3.19	6.38	9.57
	33.33	66.67	
	10.00	9.38	
Total	30	64	94
	31.91	68.09	100.00

Frequency Missing = 6

The FREQ Procedure

Statistics for Table of Q4 by group

Statistic	DF	Value	Prob
Chi-Square	4	5.8035	0.2143

Likelihood Ratio Chi-Square	4	6.9108	0.1407
Mantel-Haenszel Chi-Square	1	1.4836	0.2232
Phi Coefficient		0.2485	
Contingency Coefficient		0.2411	
Cramer's V		0.2485	

Fisher's Exact Test

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Table Probability (P)	5.846E-04
Pr <= P	0.1684

Effective Sample Size = 94  
Frequency Missing = 6

Question 5. How would you rate your ability to, by ear, determine the chord progression being used in a typical popular song on the radio? For example: "The chorus of this Journey song is a "I V vi IV" progression repeated 4 times"

Q5(Q5)	group		
Frequency			
Percent			
Row Pct			
Col Pct	Mono	Poly	Total
Moderate	14	15	29
	14.89	15.96	30.85
	48.28	51.72	
	46.67	23.44	
Strong	5	20	25
	5.32	21.28	26.60
	20.00	80.00	
	16.67	31.25	
Very Strong	0	13	13
	0.00	13.83	13.83
	0.00	100.00	
	0.00	20.31	
Very weak	3	1	4
	3.19	1.06	4.26
	75.00	25.00	
	10.00	1.56	
Weak	8	15	23
	8.51	15.96	24.47
	34.78	65.22	
	26.67	23.44	
Total	30	64	94
	31.91	68.09	100.00

Frequency Missing = 6

The FREQ Procedure

Statistics for Table of Q5 by group

Statistic	DF	Value	Prob
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Chi-Square	4	14.8038	0.0051
Likelihood Ratio Chi-Square	4	18.3235	0.0011
Mantel-Haenszel Chi-Square	1	0.2429	0.6221
Phi Coefficient		0.3968	
Contingency Coefficient		0.3689	
Cramer's V		0.3968	

Fisher's Exact Test

Table Probability (P) 2.502E-06

Pr <= P 0.0024

Effective Sample Size = 94

Frequency Missing = 6

Question 6. How would you rate your ability to compose a 4 or 8 bar melody?

Q6(Q6)	group		
Frequency			
Percent			
Row Pct			
Col Pct	Mono	Poly	Total
Moderate	13	21	34
	13.83	22.34	36.17
	38.24	61.76	
	43.33	32.81	
Strong	9	21	30
	9.57	22.34	31.91
	30.00	70.00	
	30.00	32.81	
Very Strong	6	19	25
	6.38	20.21	26.60
	24.00	76.00	
	20.00	29.69	
Weak	2	3	5
	2.13	3.19	5.32
	40.00	60.00	
	6.67	4.69	
Total	30	64	94
	31.91	68.09	100.00

Frequency Missing = 6

Statistics for Table of Q6 by group

Statistic	DF	Value	Prob
Chi-Square	3	1.5469	0.6715
Likelihood Ratio Chi-Square	3	1.5607	0.6683
Mantel-Haenszel Chi-Square	1	0.6350	0.4255
Phi Coefficient		0.1283	
Contingency Coefficient		0.1272	
Cramer's V		0.1283	

The FREQ Procedure

Statistics for Table of Q6 by group

Fisher's Exact Test

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Table Probability (P)	0.0073
Pr <= P	0.6594

Effective Sample Size = 94

Frequency Missing = 6

**Question 7. How would you rate your ability to compose a song such as one that might be played on the radio?**

Q7(Q7)	group		
Frequency			
Percent			
Row Pct			
Col Pct	Mono	Poly	Total
Moderate	15	19	34
	15.96	20.21	36.17
	44.12	55.88	
	50.00	29.69	
Strong	3	20	23
	3.19	21.28	24.47
	13.04	86.96	
	10.00	31.25	
Very Strong	0	10	10
	0.00	10.64	10.64
	0.00	100.00	
	0.00	15.63	
Very weak	1	4	5
	1.06	4.26	5.32
	20.00	80.00	
	3.33	6.25	
Weak	11	11	22
	11.70	11.70	23.40
	50.00	50.00	
	36.67	17.19	
Total	30	64	94
	31.91	68.09	100.00

Frequency Missing = 6

Statistics for Table of Q7 by group

Statistic	DF	Value	Prob
Chi-Square	4	14.4252	0.0061

Likelihood Ratio Chi-Square	4	17.7539	0.0014
Mantel-Haenszel Chi-Square	1	0.2262	0.6343
Phi Coefficient		0.3917	
Contingency Coefficient		0.3647	
Cramer's V		0.3917	

Fisher's Exact Test

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Table Probability (P)	3.589E-06
Pr <= P	0.0035

Effective Sample Size = 94

Frequency Missing = 6

**Question 8. How would you rate your ability to improvise a solo over a repeated 4 or 8 bar chord pattern?**

Q8(Q8)	group		
Frequency			
Percent			
Row Pct			
Col Pct	Mono	Poly	Total
Moderate	10	19	29
	10.64	20.21	30.85
	34.48	65.52	
	33.33	29.69	
Strong	10	18	28
	10.64	19.15	29.79
	35.71	64.29	
	33.33	28.13	
Very strong	2	15	17
	2.13	15.96	18.09
	11.76	88.24	
	6.67	23.44	
Very weak	2	5	7
	2.13	5.32	7.45
	28.57	71.43	
	6.67	7.81	
Weak	6	7	13
	6.38	7.45	13.83
	46.15	53.85	
	20.00	10.94	
Total	30	64	94
	31.91	68.09	100.00

Frequency Missing = 6

The FREQ Procedure

Statistics for Table of Q8 by group

Statistic	DF	Value	Prob
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Chi-Square	4	4.6996	0.3195
Likelihood Ratio Chi-Square	4	5.2336	0.2642
Mantel-Haenszel Chi-Square	1	0.0220	0.8820
Phi Coefficient		0.2236	
Contingency Coefficient		0.2182	
Cramer's V		0.2236	

Fisher's Exact Test

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Table Probability (P)	3.987E-04
Pr <= P	0.2974

**Question 10. Have your college music courses addressed skills necessary to determine the chord progressions used in popular songs on the radio?**

Q10(Q10)	group		
Frequency			
Percent			
Row Pct			
Col Pct	Mono	Poly	Total
A great deal	1	4	5
	1.06	4.26	5.32
	20.00	80.00	
	3.33	6.25	
Little	8	18	26
	8.51	19.15	27.66
	30.77	69.23	
	26.67	28.13	
Much	3	9	12
	3.19	9.57	12.77
	25.00	75.00	
	10.00	14.06	
Never	1	3	4
	1.06	3.19	4.26
	25.00	75.00	
	3.33	4.69	
Somewhat	17	30	47
	18.09	31.91	50.00
	36.17	63.83	
	56.67	46.88	
Total	30	64	94
	31.91	68.09	100.00

Frequency Missing = 6

Statistics for Table of Q10 by group

Statistic	DF	Value	Prob
Chi-Square	4	1.0861	0.8965

Likelihood Ratio Chi-Square	4	1.1224	0.8907
Mantel-Haenszel Chi-Square	1	0.6277	0.4282
Phi Coefficient		0.1075	
Contingency Coefficient		0.1069	
Cramer's V		0.1075	

Fisher's Exact Test

Table Probability (P)	0.0058
Pr <= P	0.9466

Effective Sample Size = 94

Frequency Missing = 6

**Question 9. In what ways, if any, do you practice determining chord progressions?**

- Accompanying folk songs/playing the piano with headphones and iPod, listening & analyzing
- Aural Training Programs Sight Singing Radio Music
- Find the root of the progression and follow where the progression goes
- Listening, feeling; and allowing all objective (theoretical) knowledge to fall into the peripherals of my consciousness.
- usually aurally, especially since i play in a rock band that doesn't really use notation, i hear , or watch what they play on their instruments. for the most part i find the tonic and figure out the music from their. when playing classical guitar i will just find the chords in whatever form they are in (i.e. inversions, arpeggios etc)
- I just listen for the differences between major and minor chords. Rarely will a song on the radio have a fully diminished, sometimes I might hear a half diminished ii, which I can pick out easily.
- Most of the time I practice
- listening and knowing what the possibilities are
- none
- listen more
- I think about the bass note of the chord first and then think about the upper notes.
- none since taking theory
- humming the bass line
- Transcribing songs by ear, composing songs from common chord progressions, jamming with friends
- online ear training websites, transcribing solos, learning progressions on piano and guitar
- Listening repeating and if necessary slow the recording down.
- Play them on piano or guitar. Listen to lots of music!
- I teach an average of 4 - 5 guitar lessons per day. Among many other things, one of the things we do is learning songs "by ear" as well as using written notation. So I am doing this on a daily basis in a professional situation.
- Soling along to jazz tracks, and just listening to songs on radio
- Noodle on guitar along with recordings, radio, jamming.
- repetition
- When I hear a song I would like to play on piano or guitar, I try to figure out what key it is in, then try typical progressions which use I-IV-V7 and sometimes ii or vi. If it is much beyond these chords, I look up the progression on the internet.
- Try to pick out on piano once in a while when needed
- With a pencil, labeling each harmonic line

- Listening to a song or singing it in my head and playing along with the piano to find the specific chords
- Listening to music a lot
- I don't really know how to go about practicing determining chord progressions.
- figuring out every song that I like
- picking them out on the guitar
- By ear, sing, then find it on the piano, or bass.
- In Class
- I don't really practice determining chord progressions.
- Harmonization
- Listen to new songs
- Figuring out the melody first, then playing it and fitting chords underneath. This is much easier for me to do when at a piano, rather than identifying  $I\bar{\bar{I}}IV\bar{\bar{I}}V\bar{\bar{I}}I$  by ear.
- Music Theory Homework
- Hearing the root of each harmonic sonority and then determining its scale degree in the key or relationship to the tonic thus its harmonic function.
- I listen to a song on the radio and try to figure out the chords by ear on guitar
- Having studied classical and jazz harmony extensively, I practice chord progressions in the context of advanced jazz exercises utilizing melody (scales and arpeggios) and chords simultaneously and also by applying jazz methodology to classical music.
- I am a jazz musician, so ear training, chord progressions and improvisation/composition are vital components to my craft. I learn more songs from recordings than from sheet music, so my ability to identify progressions is constantly improving.
- N/A
- It's something I don't really practice. I was born with pitch, so I've just known about chord progressions for a long time.
- Listening to different songs and figuring it out on the guitar and piano.
- Mainly by listening for the bass scale degrees.
- guess and check
- other than formal theory work  $\bar{\bar{I}}$  simply trying to determine the chords of a song by ear.
- The more you chord progressions you know the easier it is to figure out more chord progressions.
- Playing popular songs on guitar.
- At the piano is always helpful
- Trying to guess what they are if I hear them on the radio.
- Online tutorials
- Listening to songs and comparing the chords written provided on online websites (i.e. chordie.com) to check if they're correct or playing the song through and figuring it out.
- Composing, arranging, for fun.
- Sing the tonic pitches with the music to determine the progression
- i write pop tunes when im not composing for school, so im always experimenting with new progressions that still adhere to the 4 chord progression
- no longer practice, used to practice by listening to song, determining what chords i thought were being used, then would try to go on the internet for an analysis to check to see if i was right or wrong
- I transcribe and write lead sheets for songwriters with no experience with musical notation.
- Playing through songs on the piano.
- On the piano, through all the keys,  $I IV V I$