

Effects of Musical Experience on the Creative Thinking of Adult Non-Musicians: Architects, Industrial Designers, Chefs

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Data from Surveys of Architects and Industrial Designers

Research Sponsored in part by the National Association of Music Merchants


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About NAMM




NAMM Defined

NAMM, the *National Association of Music Merchants (NAMM)*, commonly called NAMM in reference to the organization's popular NAMM trade shows, is the not-for-profit association that unifies, leads and strengthens the \$17 billion global music products industry. Our association—and our trade shows—serve as a hub for people wanting to seek out the newest innovations in musical products, recording technology, sound and lighting—everything you need to enhance and grow your business, presentation or event! Founded more than a century ago, NAMM proudly represents a worldwide community of people who are passionate about what they do and provides them with the tools, learning and business environment they need to do it.


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RFP (Requests for Proposals) Sounds of Learning Initiative

6.1 The Impact of Music Education on Creativity

It has long been claimed that participation in music enhances an individual's creativity. Proposals are sought that will operationalize creativity as it applies to learning and to establish the level of impact music study has on making individuals creative. For example, the proposal should seek to determine the accuracy of statements such as: "Musically-trained individuals are more imaginative or innovative computer programmers."

How to Do This?

- *Do I really believe philosophically that music experiences can effect creativeness in another field?*
- *What fields do I study?*
- *How best to assess “creativity” in adult professionals?*



After Much Thought.....

- *Since creative thinking in music (and any field I will claim) involves intersections of divergent and convergent thought...*
- *And influenced by enabling conditions and enabling skills. . .*
- *And because music experience might well effect more often those adults whose work involves a blend of the aesthetic and the more linear ...*
 - *I arrived at:*
 - *Architects*
 - *Chefs*
 - *Industrial Engineers*



Frank Gehry Architecture
LA's Disney Concert Hall





T R U*

COLLECTIONS
 PRIX FIXE
 DESSERT
 LOUNGE
 SPECIAL EVENTS
 PRIVATE DINING MENUS
 WEDDINGS



OVERVIEW OF THE STUDY

The purpose of this study is to investigate formal and informal musical experiences during elementary, secondary, and undergraduate college years for three select cohorts of professionals to determine if these experiences might be associated with creative achievement in their respective fields. The three cohorts of professionals will include a sampling of professional: (1) architects, (2) engineers, and (3) chefs—all working in the Chicago area. Through a detailed, professionally developed survey, the experiences of a large sample of each cohort will be compared to a consensually identified creative subset from each cohort labeled as the “creatives.” Groups will be compared. We reason that if the profiles of experiences are significantly different for the creatives, this might be a basis for believing in some association between music and creative achievement amongst these professionals. In addition to the quantitative results from the survey, the creatives will be interviewed in depth to explore the results of the survey and other factors drawn from the adult literature on creativity that might be self-identified as factors for their creative success.

Research Questions

- *Given three separate cohorts of professionals outside of music, what are the significant differences in profiles of musical experience between a random sample drawn from each cohort and a selected group of creative achievers within that cohort?*
- *Do these profiles differ according to the nature of the musical experiences (formal participation experiences, creative-based experiences, and informal, out-of-school experiences)?*
- *Do gender and professional experience level of the sampled cohorts and creatives play a roll in these results?*

Survey of Musical Background

Name: _____ Email Address: _____

Business: _____ Location: _____

Gender: Male __ Female __ Years in the Profession: 1-5 __ 6-10 __ 11-15 __ 16-20 __ 20+ __

Directions: We are studying the relationship between creative success in adults engaged in selected professions (chefs, architects and engineers) and school music experiences. Your name was randomly chosen from a database of noted [chefs/architects/engineers] in the Chicagoland area.

This survey is designed to gather some baseline information about your musical engagement during your years of education, pre-school through college. We focus largely on your elementary and secondary school experience both in and outside of formal instruction. We also ask you to reflect on your musical experiences in college. To help us with more detailed interviews during the second phase of the study, we end the survey by asking you to list the names of 10 [chefs, architects, engineers] in the Chicagoland area that, in your professional estimation, are the most creative in their professional achievements to date.

The survey should take less than twenty minutes to complete and is a mixture of directed and more open-ended items. Note that all responses will be treated confidentially and will only be seen by the principle researcher and two other doctoral assistants working on this project.

I. Formal Music Education in Elementary and Secondary School

1. Did you play a musical instrument in a school-related program during your elementary and secondary instruction? Yes __ No __

If yes, please indicate the instrument(s) you played and for how long?

Did you study instruments privately or in small classes with teachers within the school and for how long? Yes __ No __ Number of Years ____

2. Did you participate in an instrumental ensemble during your elementary and secondary schooling? Yes __ No __ If so, specify below which ensembles by placing a check mark by the group and then supplying the number of years you recall participating:

__ Concert band Number of Years ____
 __ Jazz band Number of Years ____
 __ Marching band Number of Years ____
 __ Orchestra Number of Years ____
 __ Chamber group Number of Years ____

Other instrumental ensembles not listed above (e.g. Mariachi band, African drumming ensemble):

____ Number of Years ____

____ Number of Years ____

3. Did you study voice privately during your elementary and secondary schooling?

Yes __ No __ If so, for how many years? ____

4. Did you sing in any choral ensembles during your elementary and secondary schooling?

Yes __ No __ If so, describe below:

__ Elementary school choir Number of Years ____

__ High school concert choir Number of Years ____

Other choir ensembles (e.g. show choir, madrigal ensemble):

____ Number of Years ____

____ Number of Years ____

5. Most formal schooling at the elementary and secondary level includes some kind of classroom experiences with music. Think back to your time in elementary and secondary school and place a check mark next to those music experiences you remember in the classroom. For each of these activities you remember, rate the level of your personal enjoyment on a scale from 5 to 1 with "5" representing most enjoyed to "1" as least enjoyed:

	5			1
	most enjoyed			least enjoyed
__ Singing songs in class	__	__	__	__
__ Moving to music in class	__	__	__	__
__ Playing informal instruments (e.g. xylophones, claves)	__	__	__	__
__ Learning to play the guitar as a class	__	__	__	__
__ Learning to play the recorder/flutophone as a class	__	__	__	__
__ Learning to play the piano as a class	__	__	__	__
__ Composing original music either by yourself or in groups	__	__	__	__
__ Improvising music	__	__	__	__
__ Working with electronic keyboards	__	__	__	__
__ Using computers of learn more about music	__	__	__	__
__ Learning to write music notation	__	__	__	__
__ Learning to read music notation	__	__	__	__
__ Creating your own music notation	__	__	__	__
__ Attending musical events as part of field trips	__	__	__	__
__ Creating class plays or other dramatic events using music	__	__	__	__
__ Listening to music informally	__	__	__	__
__ Listening to music to identify elements (e.g. rhythm, melody, or form)	__	__	__	__
__ Talking about music and its relation to history in general	__	__	__	__
__ Talking about music and its relation to other art forms	__	__	__	__
__ Studying music theory formally	__	__	__	__

SURVEY DESIGN

I. Music Listening in Your Life

Preference, Live Concert Attendance

II. Formal Music Education in Elementary and Secondary Schools

Playing and Instrument, Singing, Lessons, General Classroom Music

III. Musical Experiences Outside of School

Music at Home, Community Music, Informal Music Making

IV. Musical Experiences After K-12 Schooling

Higher Education(Formal/Informal), Musical Experiences Currently

V. Final Thoughts

VI. Most Creative in the Field (Consensual Nominated)

Sample Set Based in Chicago, Illinois

- Architects

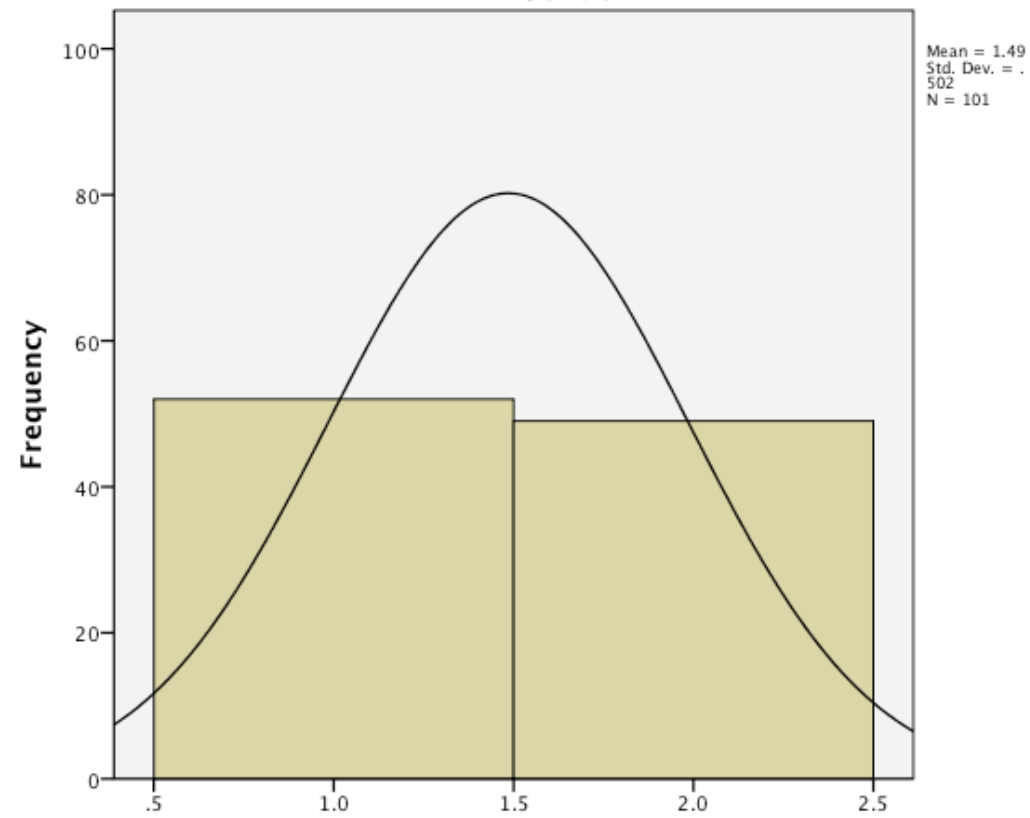
- American Institute of Architects
Zurich Esposito, Executive Vice President
- Mailing List (approx 1000 members)

- Industrial Designers

- Segal Design Institute
(Northwestern University)
Kim Hoffmann, Associate Director
- Mailing List for Institute (and links to the Stanford University Industrial Design program (approx 500 members)



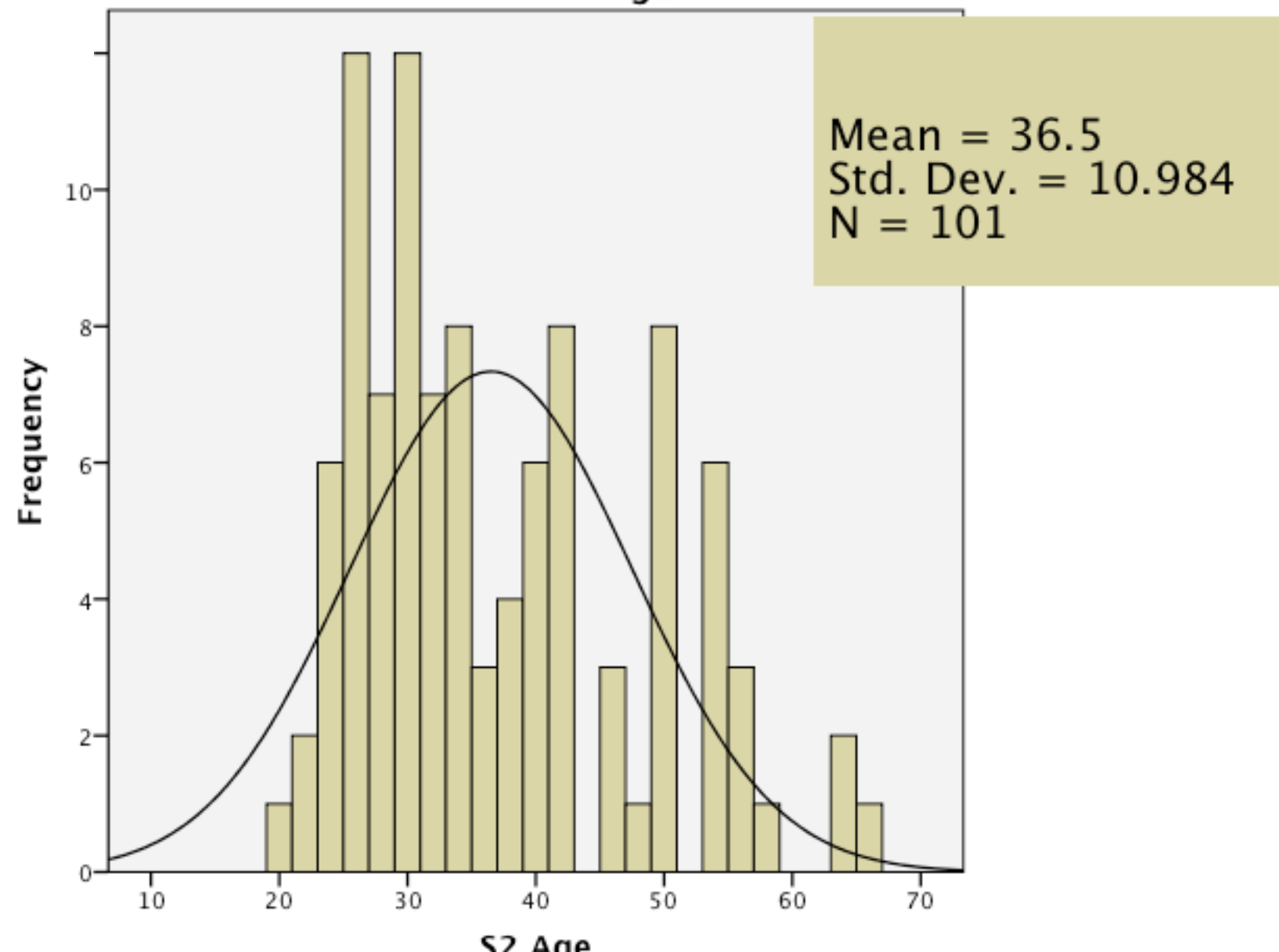
Gender



n= 51 Architects

n= 50 Industrial Designers

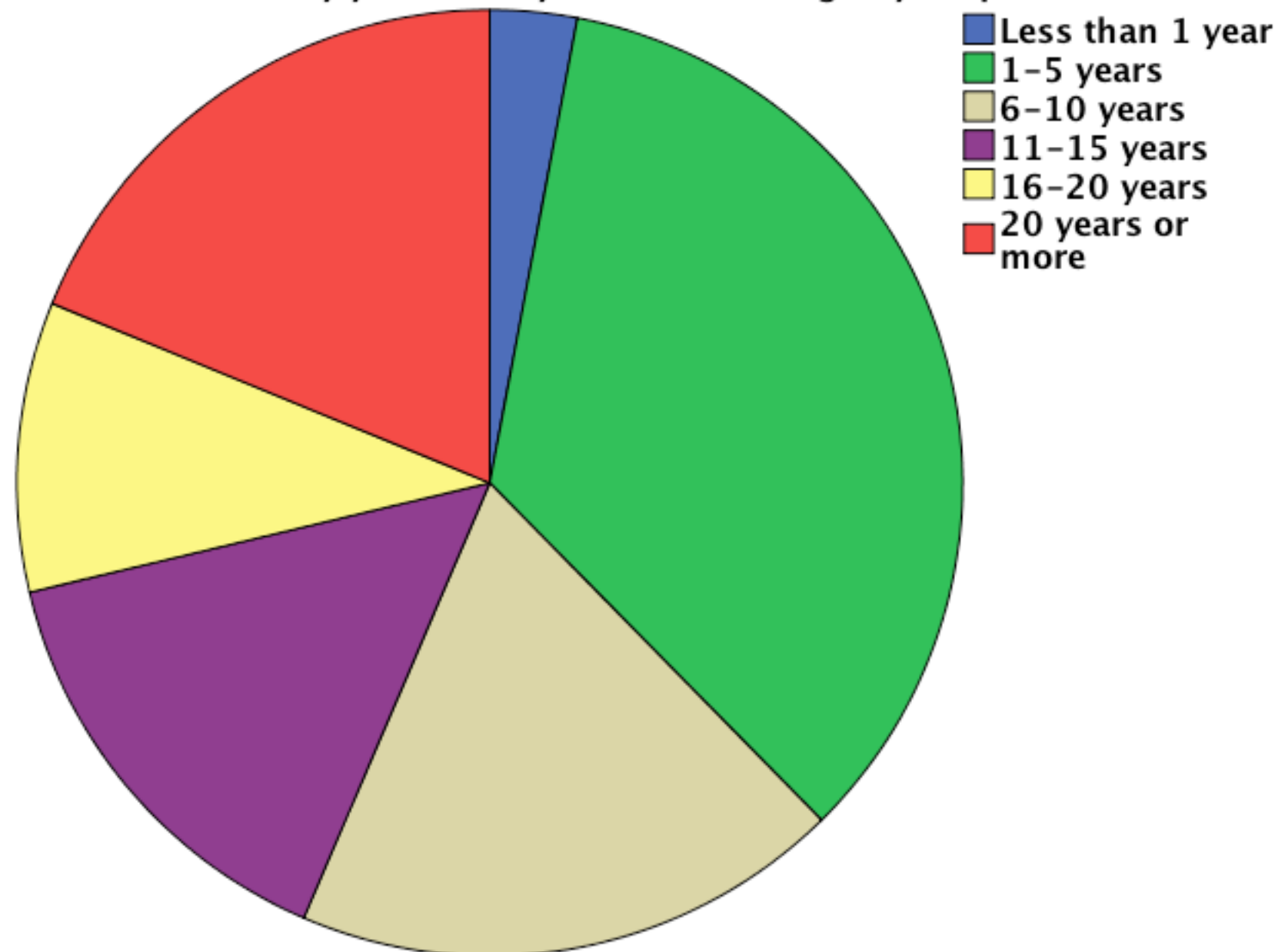
Age



S3 How many years have you been working in your profession?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 1 year	3	2.9	3.0	3.0
	1-5 years	35	34.3	34.7	37.6
	6-10 years	19	18.6	18.8	56.4
	11-15 years	15	14.7	14.9	71.3
	16-20 years	10	9.8	9.9	81.2
	20 years or more	19	18.6	18.8	100.0
	Total	101	99.0	100.0	
Missing	System	1	1.0		
Total		102	100.0		

S3 How many years have you been working in your profession?



S1 Gender * S3 How many years have you been working in your profession? Crosstabulation

Count

		S3 How many years have you been working in your profession?						Total
		Less than 1 year	1-5 years	6-10 years	11-15 years	16-20 years	20 years or more	
S1 Gender	Male	1	14	9	8	5	15	52
	Female	2	21	10	7	5	4	49
Total		3	35	19	15	10	19	101

Chi-Square Tests

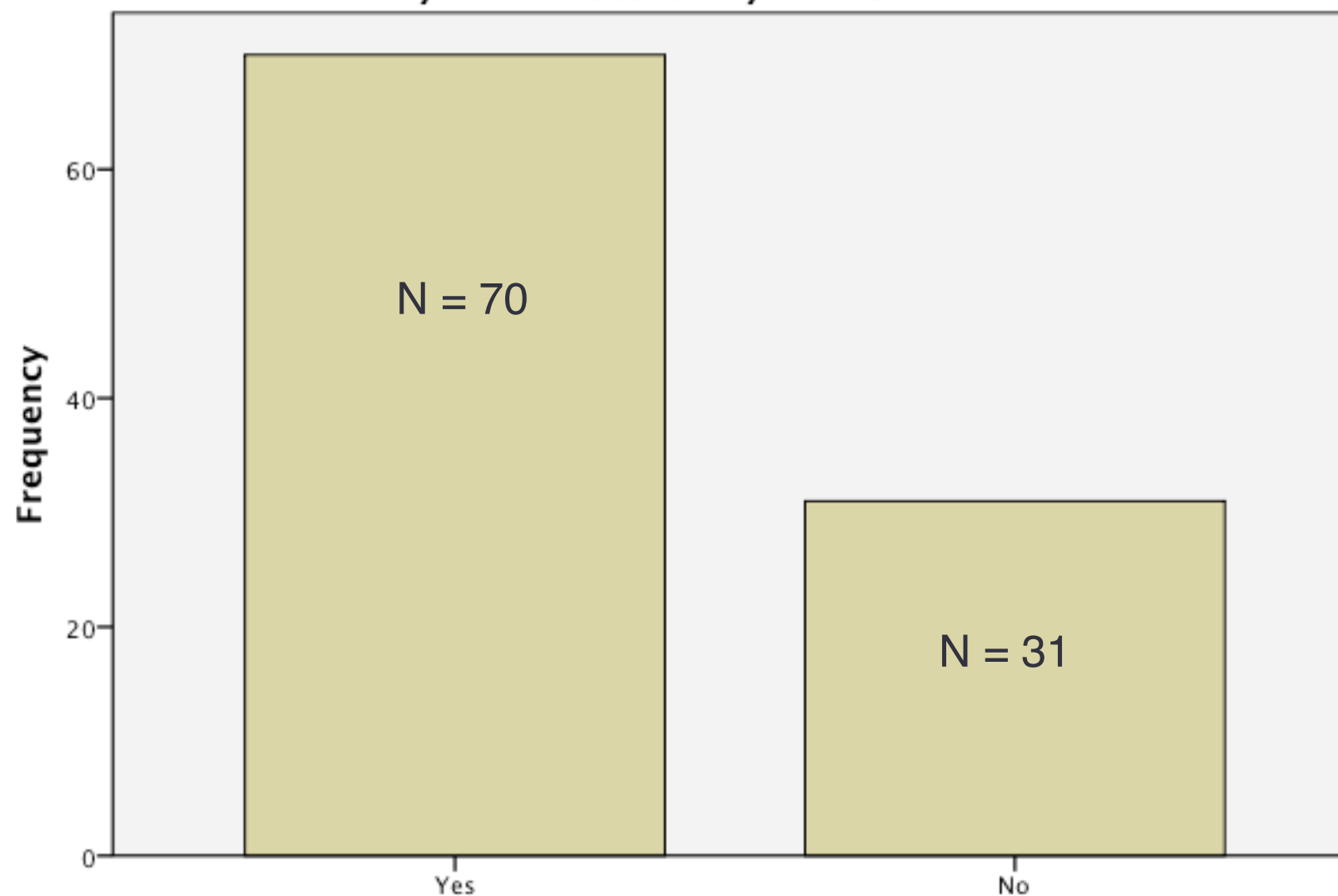
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.139 ^a	5	.149
Likelihood Ratio	8.562	5	.128
Linear-by-Linear Association	6.898	1	.009
N of Valid Cases	101		



V. Final Thoughts Section

In considering your musical experiences growing up, do you feel that there is a relationship between these experiences and the ones that have led you to success in your field?

Q14 Relationship between musical experiences and the ones that have led you to success in your field?

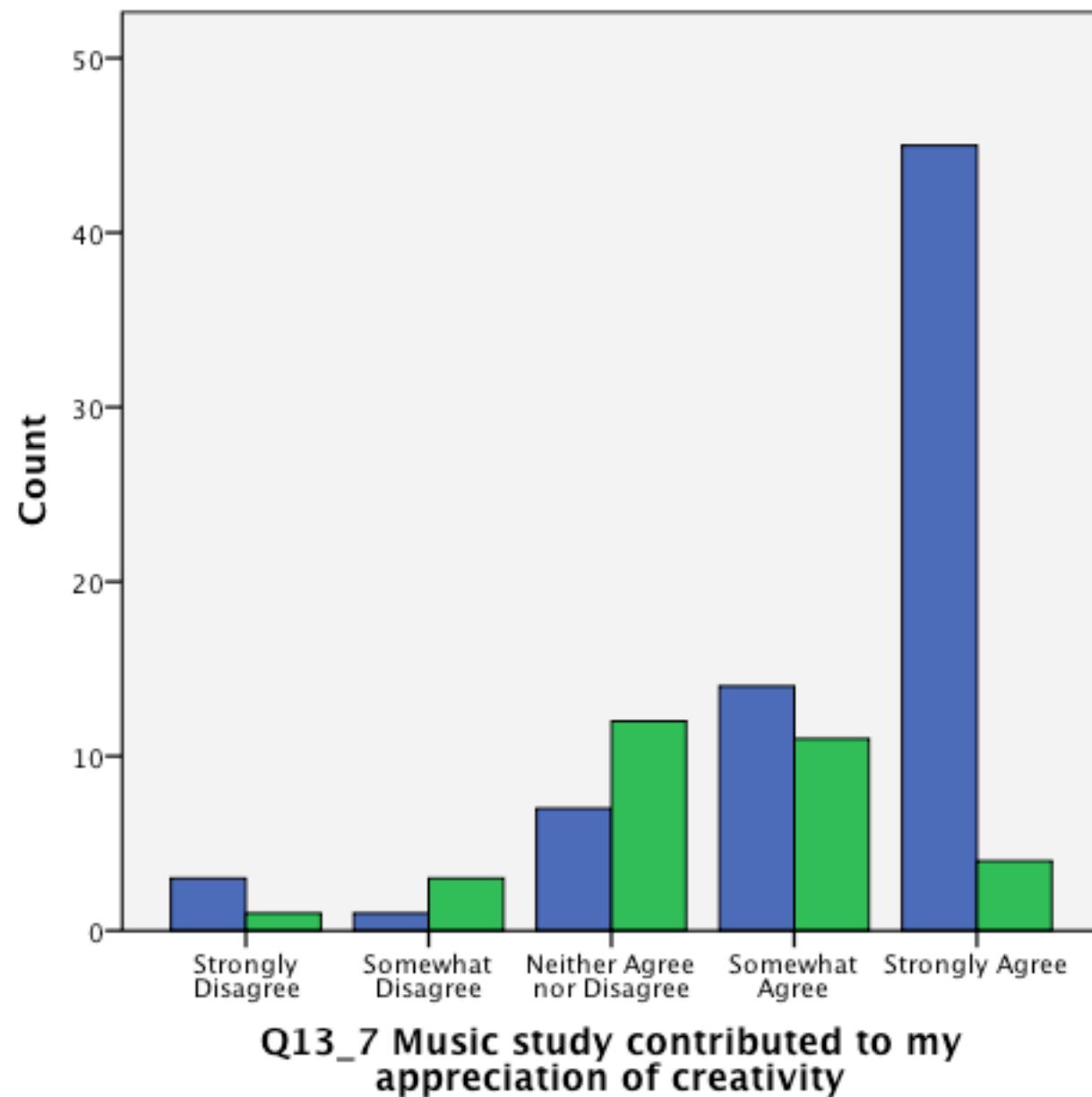


Q14 Relationship between musical experiences and the ones that have led you to success in your field?

Series of Final Statements Rated

	5				1
	—	—	—	—	—
	—	—	—	—	—
★ I can think more creatively because of musical experience.	—	—	—	—	—
Most school music experiences were of little interest to me.	—	—	—	—	—
My music teachers were important mentors for me.	—	—	—	—	—
★ I considered going to college as a music major.	—	—	—	—	—
★ Music study contributed to my appreciation of creativity.	—	—	—	—	—

Bar Chart

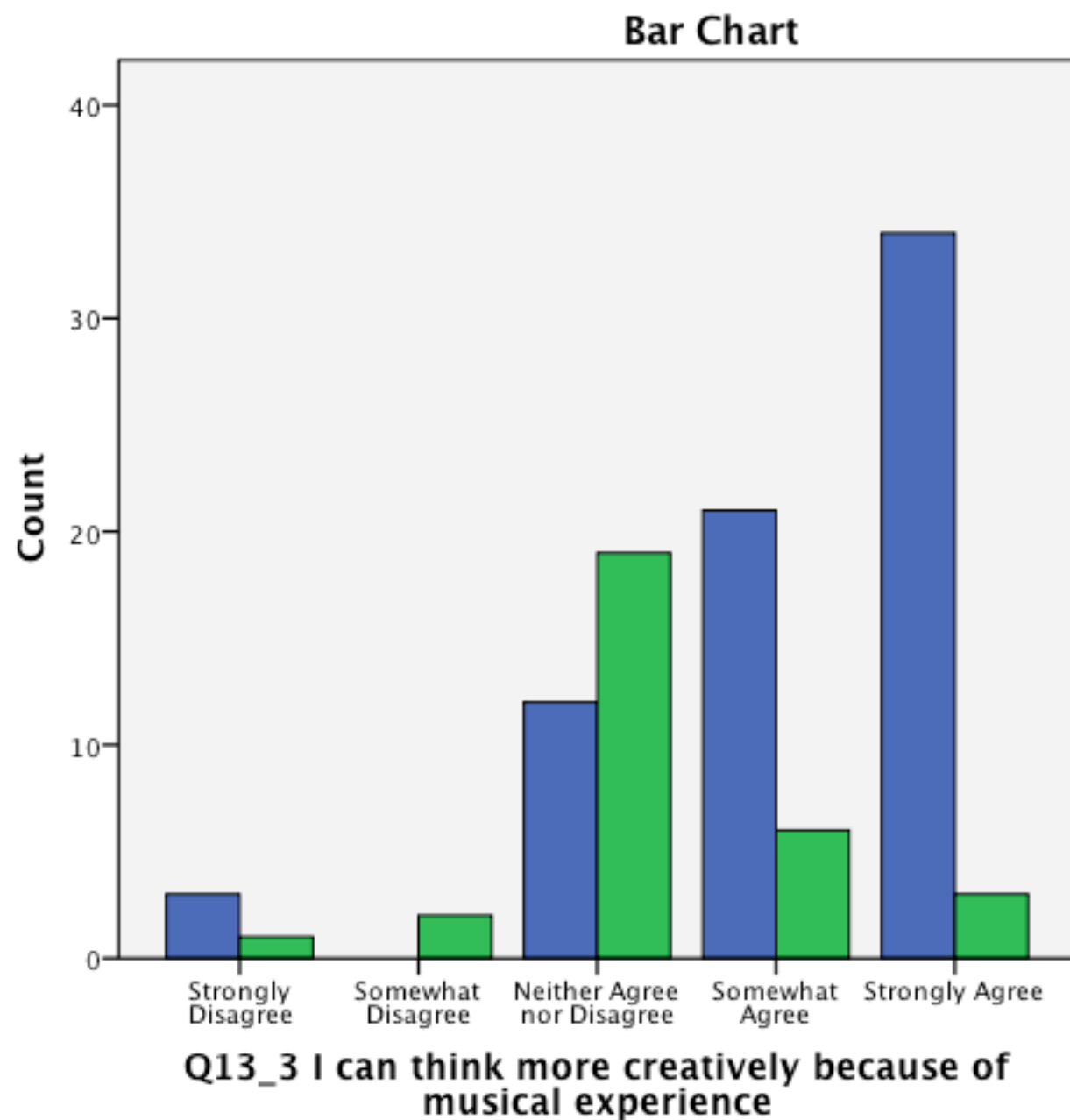


Crosstab

Count		Q14 Relationship between musical experiences and the ones that have led you to success in your field?		Total
		Yes	No	
Q13_7 Music study contributed to my appreciation of creativity	Strongly Disagree	3	1	4
	Somewhat Disagree	1	3	4
	Neither Agree nor Disagree	7	12	19
	Somewhat Agree	14	11	25
	Strongly Agree	45	4	49
Total		70	31	101

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	26.939 ^a	4	.000
Likelihood Ratio	28.547	4	.000
Linear-by-Linear Association	15.752	1	.000
N of Valid Cases	101		



Q14
Relationship
between
musical
experiences
and the ones
that have led
you to
success in
your field?

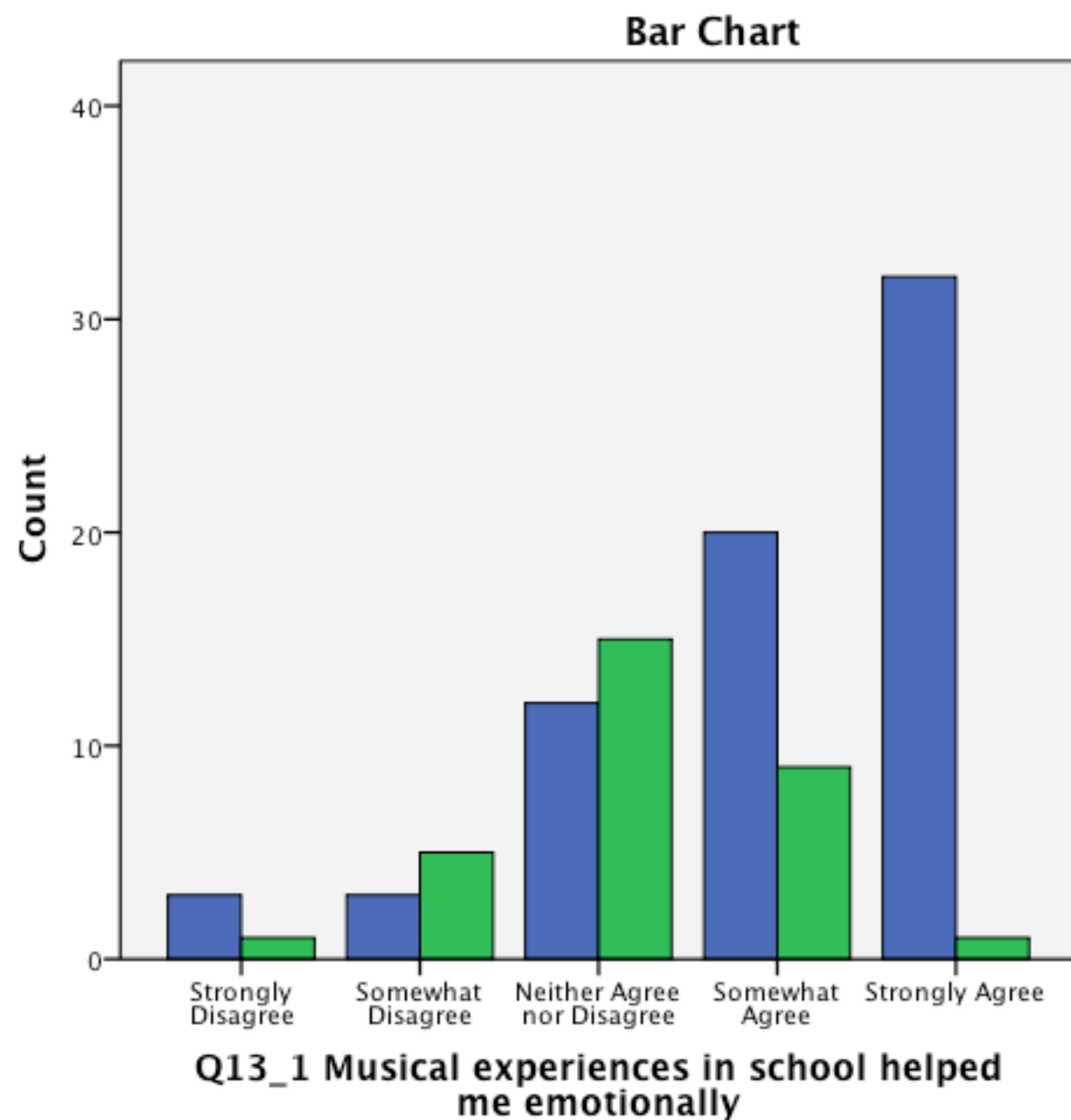
Yes
No

Crosstab

		Q14 Relationship between musical experiences and the ones that have led you to success in your field?		Total
		Yes	No	
Q13_3 I can think more creatively because of musical experience	Strongly Disagree	3	1	4
	Somewhat Disagree	0	2	2
	Neither Agree nor Disagree	12	19	31
	Somewhat Agree	21	6	27
	Strongly Agree	34	3	37
Total		70	31	101

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	28.003 ^a	4	.000
Likelihood Ratio	29.250	4	.000
Linear-by-Linear Association	16.655	1	.000
N of Valid Cases	101		



Q14
Relationship
between
musical
experiences
and the ones
that have led
you to
success in
your field?

Yes
No

Crosstab

		Q14 Relationship between musical experiences and the ones that have led you to success in your field?		Total
		Yes	No	
Q13_1 Musical experiences in school helped me emotionally	Strongly Disagree	3	1	4
	Somewhat Disagree	3	5	8
	Neither Agree nor Disagree	12	15	27
	Somewhat Agree	20	9	29
	Strongly Agree	32	1	33
Total		70	31	101

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	23.584 ^a	4	.000
Likelihood Ratio	27.492	4	.000
Linear-by-Linear Association	15.487	1	.000
N of Valid Cases	101		

Effect of Gender, Age, and Years of Professional Experience for Perceived Role of Music and Creative Work (Q14)

Crosstab

Count		Q14 Relationship between musical experiences and the ones that have led you to success in your field?		
		Yes	No	Total
S1 Gender	Male	37	15	52
	Female	33	16	49
Total		70	31	101

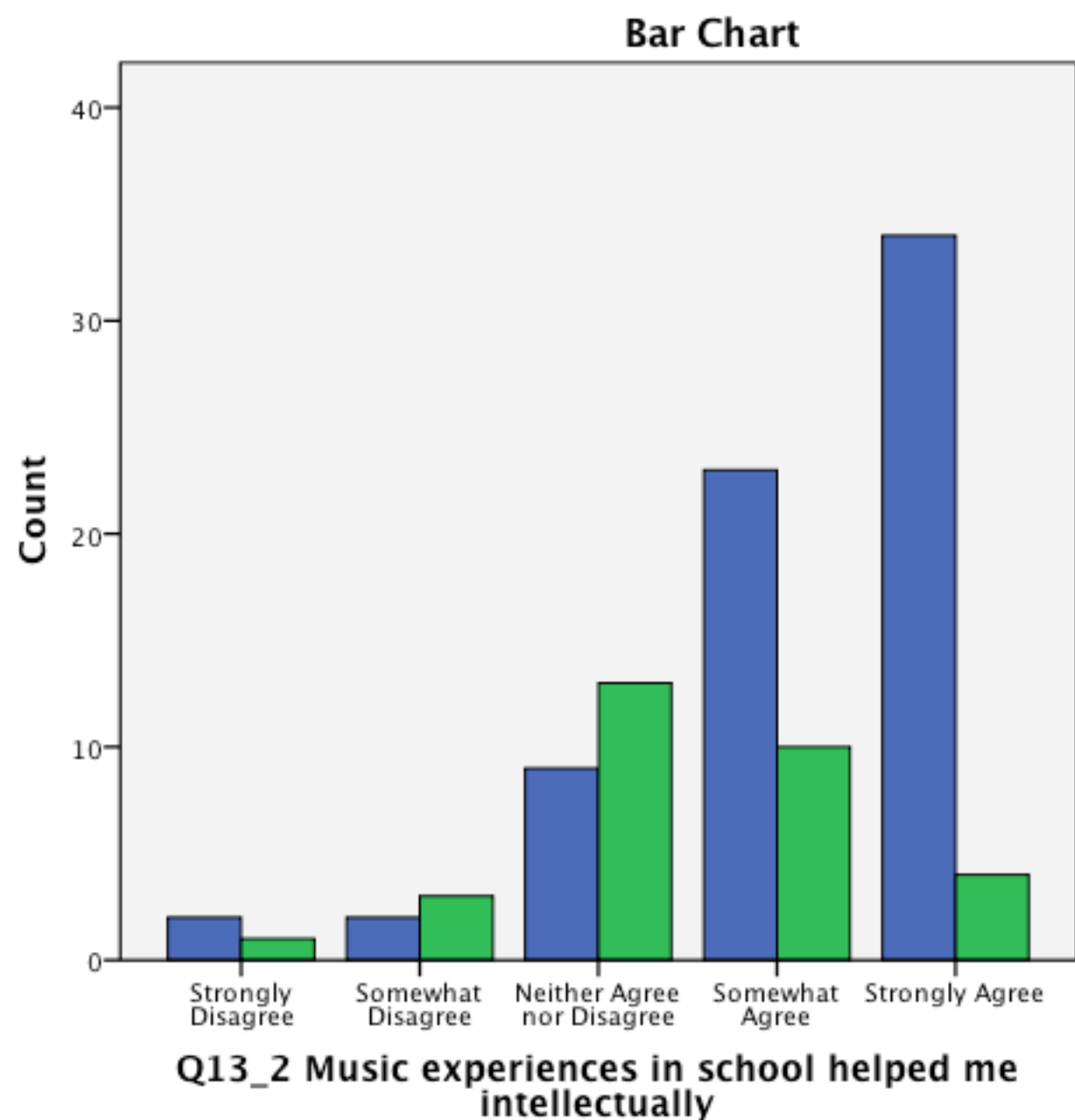
Crosstab

Count		Q14 Relationship between musical experiences and the ones that have led you to success in your field?		Total
		Yes	No	
Age - Net	20-29	24	9	33
	30-39	24	8	32
	40-49	12	7	19
	50-59	8	6	14
	60 or more	2	1	3
Total		70	31	101

Crosstab

Count		Q14 Relationship between musical experiences and the ones that have led you to success in your field?		Total
		Yes	No	
Age - Net	20-29	24	9	33
	30-39	24	8	32
	40-49	12	7	19
	50-59	8	6	14
	60 or more	2	1	3
Total		70	31	101

No Chi Square Significance

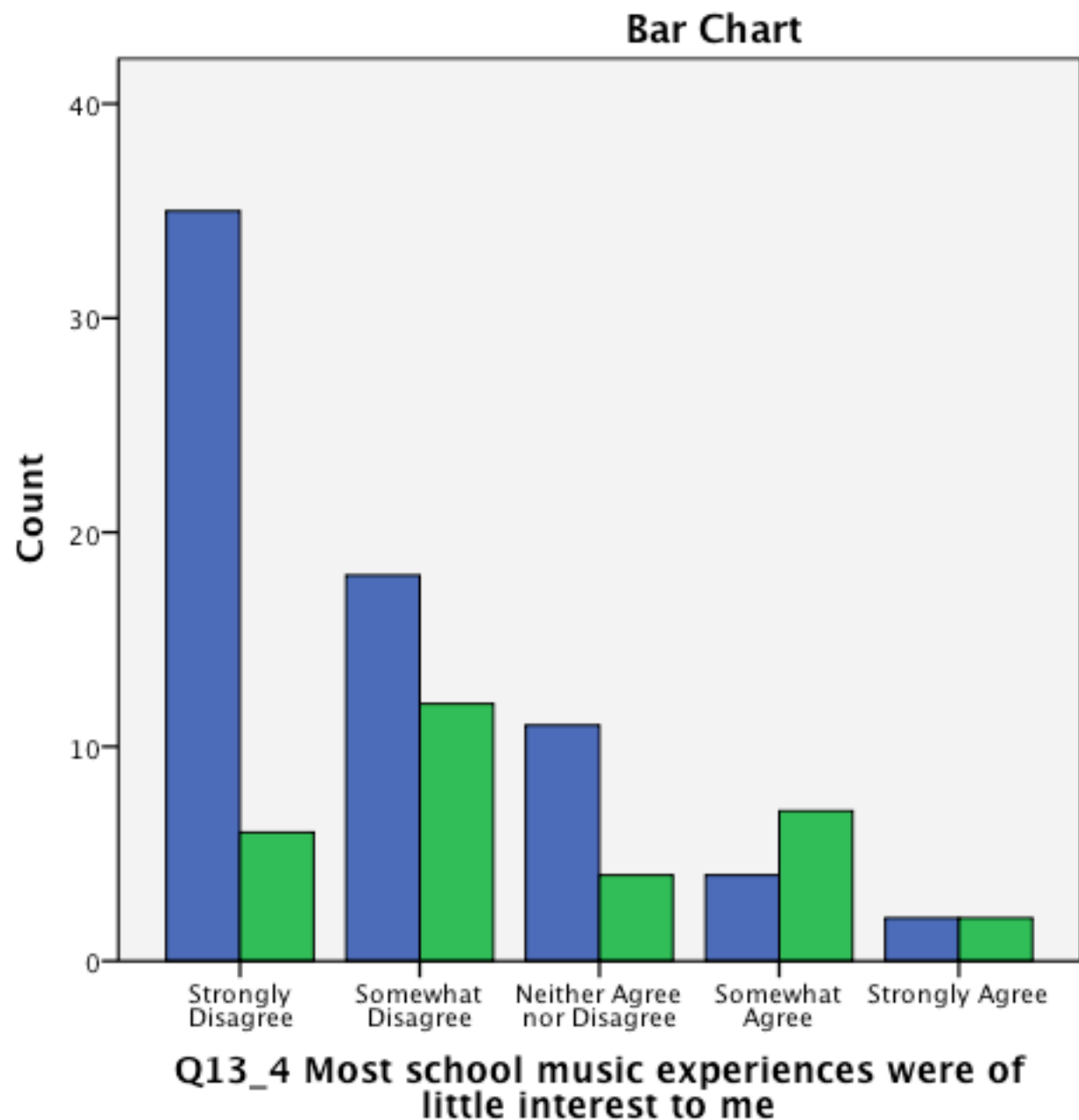


Crosstab

		Q14 Relationship between musical experiences and the ones that have led you to success in your field?		Total
		Yes	No	
Q13_2 Music experiences in school helped me intellectually	Strongly Disagree	2	1	3
	Somewhat Disagree	2	3	5
	Neither Agree nor Disagree	9	13	22
	Somewhat Agree	23	10	33
	Strongly Agree	34	4	38
Total		70	31	101

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	17.636 ^a	4	.001
Likelihood Ratio	18.183	4	.001
Linear-by-Linear Association	12.699	1	.000
N of Valid Cases	101		

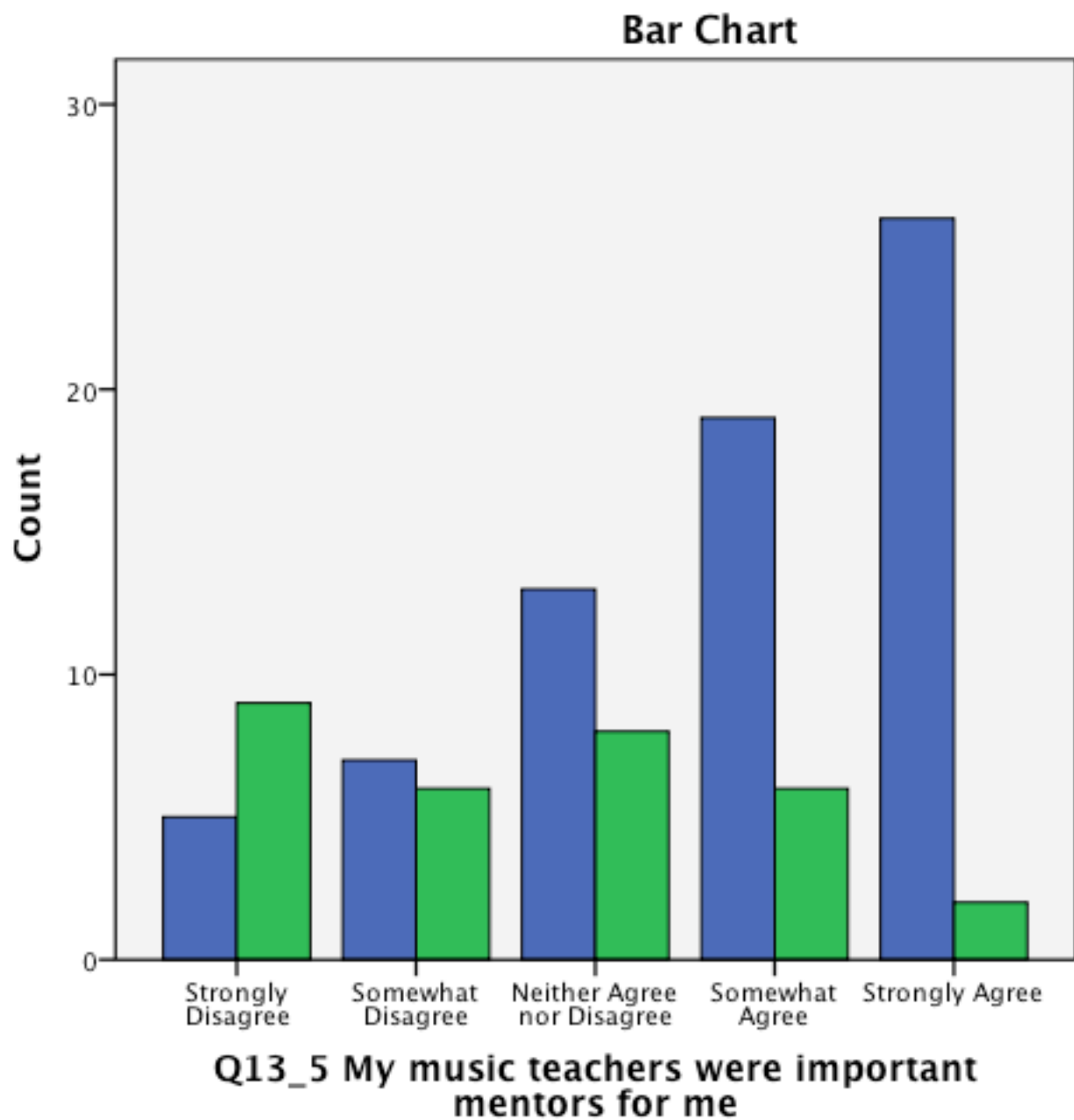


Crosstab

Count		Q14 Relationship between musical experiences and the ones that have led you to success in your field?		Total
		Yes	No	
Q13_4 Most school music experiences were of little interest to me	Strongly Disagree	35	6	41
	Somewhat Disagree	18	12	30
	Neither Agree nor Disagree	11	4	15
	Somewhat Agree	4	7	11
	Strongly Agree	2	2	4
Total		70	31	101

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	12.619 ^a	4	.013
Likelihood Ratio	12.676	4	.013
Linear-by-Linear Association	8.308	1	.004
N of Valid Cases	101		



Q14
Relationship
between
musical
experiences
and the ones
that have led
you to
success in
your field?

Yes
No

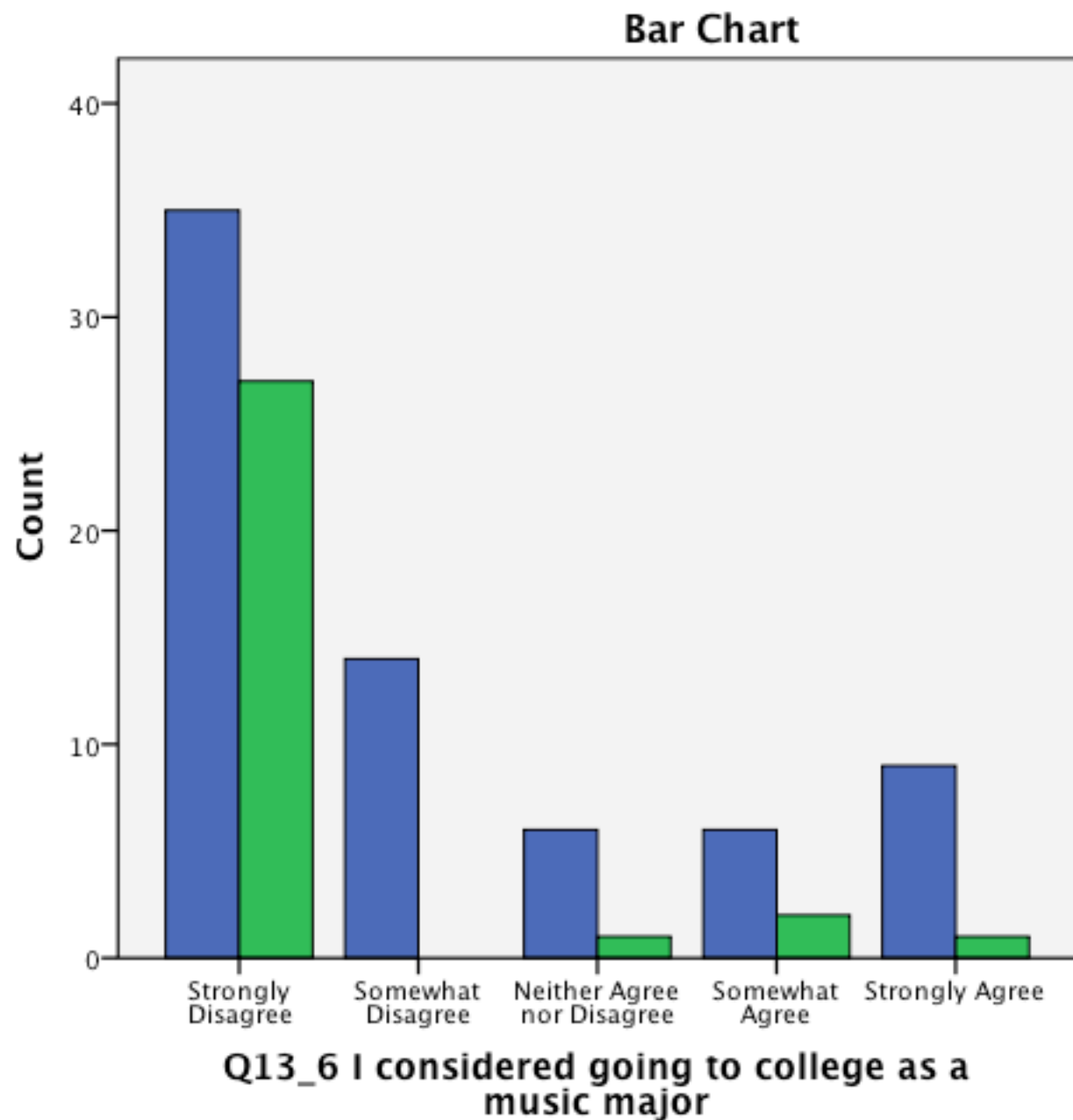
Crosstab

Count

		Q14 Relationship between musical experiences and the ones that have led you to success in your field?		Total
		Yes	No	
Q13_5 My music teachers were important mentors for me	Strongly Disagree	5	9	14
	Somewhat Disagree	7	6	13
	Neither Agree nor Disagree	13	8	21
	Somewhat Agree	19	6	25
	Strongly Agree	26	2	28
Total		70	31	101

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	17.255 ^a	4	.002
Likelihood Ratio	18.490	4	.001
Linear-by-Linear Association	16.901	1	.000
N of Valid Cases	101		



Q14 Relationship between musical experiences and the ones that have led you to success in your field?

Yes No

Crosstab

Count		Q14 Relationship between musical experiences and the ones that have led you to success in your field?		Total
		Yes	No	
Q13_6 I considered going to college as a music major	Strongly Disagree	35	27	62
	Somewhat Disagree	14	0	14
	Neither Agree nor Disagree	6	1	7
	Somewhat Agree	6	2	8
	Strongly Agree	9	1	10
Total		70	31	101

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	14.037 ^a	4	.007
Likelihood Ratio	18.402	4	.001
Linear-by-Linear Association	6.452	1	.011
N of Valid Cases	101		

Music Experience Indices and Responses to Q14

Music Experiences	N	Index Total	Indices for Those Answering Question 14		Sig.
			Yes	No	
Early Years Listen	101	4.4	4.6	3.9	
Young Adult Listen	101	6.3	5.9	7.2	
Adult Listen	95	6.6	6.4	7.2	
<u>Yrs Play Inst</u>	70	10	10.6	8.4	
<u>Yrs Private Lessons</u>	80	5	5.1	4.6	
<u>Yrs Inst Ensemble</u>	61	8.4	8.8	7.4	
<u>Yrs Choral Ensemble</u>	59	5.3	5.4	5.1	
Enjoy <u>GenMus</u> List	91	4.5	4.6	4.1	.012*
Enjoy <u>GenMus</u> Move	64	3.7	3.6	3.9	
Enjoy <u>GenMus</u> Perf	98	7.6	8.0	6.7	.034*
Enjoy <u>GenMus</u> Read/Talk	75	8.9	9.4	7.3	.05*
Enjoy <u>GenMus</u> Create	61	6.6	7.4	4.8	.017*
<u>HomeInflu</u>	101	16.8	17.5	15.3	
<u>Yrs Community Music</u>	79	10.2	11.1	7.9	
Interest Community Music	79	7.9	8.6	5.8	.046*
<u>Yrs Informal Music</u>	101	.82	1	.3	.025*
<u>HigherEd</u> Formal Music	101	1.2	1.3	.7	
<u>HigherEd</u> Informal Music	101	1.3	1.4	1.0	

*p<.05

Correlations Between Music Experiences and Final Creative Statements Rated

		Think More Creatively Because of Music Experience		Music Contributed to My Appreciation of Creativity	
Music Experiences	N	r	Sig.	r	Sig.
Early Years Listen	101	.08		.10	
Young Adult Listen	101	-.03		-.13	
Adult Listen	95	-.13		-.18	
<u>Yrs Play Inst</u>	70	.17		.15	
<u>Yrs Private Lessons</u>	80	.14		.20	
<u>Yrs Inst Ensemble</u>	61	.09		.21	
<u>Yrs Choral Ensemble</u>	59	.09		.01	
Enjoy <u>GenMus</u> List	91	.23	.031*	.25	.017*
Enjoy <u>GenMus</u> Move	64	.14		.18	
Enjoy <u>GenMus</u> Perf	98	.30	.003**	.291	.004**
Enjoy <u>GenMus</u> Read/Talk	75	-.03		.120	
Enjoy <u>GenMus</u> Create	61	.11		.01	
<u>HomeInflu</u>	101	.23	.023*	.23	.021*
<u>Yrs Community Music</u>	79	.28	.012*	.22	.047*
Interest Community Music	79	.17		.07	
<u>Yrs Informal Music</u>	101	.21	.037*	.15	
<u>HigherEd</u> Formal Music	101	.08		-.01	
<u>HigherEd</u> Informal Music	101	.25	.011*	.12	

*p<.05

**p<.01

Words of Architects

I think that the premise of this study is interesting. I have never given much thought to how any musical training I may have received would correlate to my architectural creativity. I actually would have assumed I was drawn towards architecture because I was not as talented musically...

Truth is my experience studying music for so many years was more an experience interacting with people - listening to them, responding to them ... Mimicking them, leading them... It taught me to be a member of an ensemble and how to take a solo without playing over everyone else around you... Music is about interaction... About feeling... About telling... About being with people.

This answer is going to be far too brief. I apologize I don't have more time to write it now. There is a strong correlation between order and creativity in music and architecture. Playing music (limitation of tonal structure and time signature), and playing a particular instrument (limits of sounds) taught me that there is greater freedom in working within some limits than trying to be creative with tabula rasa. Playing music taught me that there are ways of telling a story without words. In music, you tell stories with the relationship of sounds; in architecture, you tell stories with the relationship of materials and people.

Listening and playing music has helped to develop my critical thinking about design and architecture. The social aspect of playing music with other people has strengthened my connections to the creative community in Chicago.

I think playing an instrument forces you into a particular thinking style. You are required to pay attention to minute details regarding tones, notes, counting, etc. This style of thinking translates into architecture because here to you are required to pay attention to details, so it just happens naturally.

Music, like architecture, is about combining different components into a harmonious composition. With music, we combine infinite combinations of notes, pauses, and rhythms. With architecture, we combine infinite combinations of building elements, patterns, and visual rhythms. I believe that having that formal music education at an early age has helped me in the architectural field. Also, I find that my music appreciation in general, regardless of my formal education influences how I design and work. Sometimes I feel, especially when in school, that I design better when inspired by the music I'm listening to.

Music and design share many qualities, including the words/language in each craft such as tone, color, rhythm, space, form, lightness vs. heaviness, flow, etc. Music helps me think about three dimensional design of space as music has three-dimensional qualities on its own. When I am engaged in design work, I often ask myself "How would I express this in music if I weren't doing this in design?", and that usually leads me somewhere.

Words of Industrial Designers

Music and musical structure are the theoretical foundation of my work, both as a practitioner and a professor of design. Music makes it clear that contrasting thematic material and bridges between the material are what makes design work.

Music also reinforces the emotional nature of design. I could go on for ages.

Social experiences were much more influential. If music is a vehicle to social interaction, I think that probably accounts for a lot of the relationship you might find between music & creativity.

If anything, music has been a distraction for me from focusing exclusively on my other talents, such as design. Keeping musical skills honed requires *time*...so I really look at it as a detractor instead of a contributor to my work as a designer. I enjoy it, but I've always considered it a leisure activity and never once considered going to school as a music major, which probably shocked a lot of people.

I am not sure if it is the relationship that you are looking for. I think that it works backwards from what you seem to be asking for. I am very creative, but not because of music. I enjoy making music, but find that I really enjoy creating music (song writing) over other aspects of music. So in essence as a designer I naturally find myself gravitating toward the creative aspects of music rather than the rote aspects. I discovered myself as a designer and creative before I discovered my need for music

I think being good at anything requires both discipline and passion. I learned how to be disciplined about practicing and what it feels like to be in the zone while playing music. Both of these things are also helpful while being creative professionally.

Creating a song is like creating a solution. You are trying to guide a pleasant emotional experience, just like solving a problem with a product / service / experience. You are thinking through how someone will experience that and giving your little stamp to how it should go. The process of getting to that solution is part of the beauty and fun of it. Constantly iterating, examining certain parts, performing it, gauging reaction and refining. Both very organic forms that at some point result in something you deem finished enough to move on to the next thing / song / experience.

I don't believe music education or training helped me succeed as an industrial designer. I do believe powerful and creative music has inspired me as a designer, but I'm not sure if, for me, the link between music and design is any stronger than that of a writer, or even lawyer, for example.

WHAT'S NEXT





Send Requests for results
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