MULTI-RESOLUTION WAVELET ANALYSES OF TWO DIFFERENT PERFECTIONISM SCALES: A UNIVERSITY SAMPLE

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Abstract

Our prior studies indicated that statistical and wavelet analyses of perfectionism inventories were evaluated by SPSS and Wavelet packets. The main aim of the present study is to investigate different scale affects on perfectionism. We proposed that changes of low-frequency Meyer wavelets reflect students' perfectionism levels. We used Wavelet 1D and continuous 1D Wavelet analyses to measure their time dependence. We studied students' questionnaires. Multi-resolution analysis was obtained from continuous and discrete data as a function of cases at different scales. Large scale effects are assumed to play an important role on students with higher others-oriented perfectionism and adaptive perfectionism. Continuous wavelet 1D (Mexh) analyses show the similar results and, large scale effects play an important role on students' behavior. In contrast, lower scale effects are assumed to play an important role on students with adaptive perfectionism and self-directed perfectionism

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1. INTRODUCTION

"The history of "Almost Perfect Scale" dates back to 1996, 1999 when Slaney et.al. tried to determine the perfectionist attitudes of individuals and to differentiate the adaptive and maladaptive aspects of perfectionism Slaney et.al. (2001).This article describes the development of the Almost Perfect Scale--Revised (APS--R). Exploratory and confirmatory factor analyses and data exploring the reliability and construct validity of the subscales are provided. The scale is in likert type 1 fully disagree, 2 disagree, 3 partially disagree, 4 neither agree nor disagree, 5 partially agree, 6 agree and 7 fully agree. Likert item is a statement that measures, in this study, the level of agreement or disagreement (Likert (1932).

The first version of the scale developed by Slaney and Johnson (1992) was revised in 1996 and 2001 due to certain reasons. First of all, sub-scales were not enough to measure the maladaptive aspects of perfectionism. Second of all, some sub-scales were results of being perfectionist rather than determining the nature of perfectionism. Second of all, some sub-scales were results of being perfectionist rather than determining the nature of perfectionism. For this reason, Slaney et. al. increased the number of items in standards sub-scale and added a new sub-scale, called discrepancy. The reliability and validity studies were done with corrective and explanatory factor analysis. In other words, psychometric data were gathered that APS_R measured adaptive and maladaptive perfectionism

The revised scale has 3 sub-scales: high standards (7 item), order (4 item), and discrepancy (12 item) "Almost Perfect Scale" is translated and adapted into Turkish by Sapmaz (2006).

Human-Computer Interaction (HCI) has mostly developed along two competing methodologies, (Chen and Wechsler, 2007): direct manipulation and

intelligent agents. Other possible but complementary methodologies are those of augmented cognition and affective computing and their adaptive combination.

Emotional intelligence (EQ) is an aspect of human intelligence that has been argued to be a better predictor than IQ for measuring aspects of success in life, especially in social interactions, learning, and adapting to what is important (Pantic, 2010). When it comes to machines, not all of them will need emotional skills. Yet to have machines like computers, broadcast systems, and cars, capable of adapting to their users and of anticipating their wishes, endowing them with the ability to recognize user's affective states is necessary.

Ruiz and her group investigated the trait emotional intelligence profiles of 512 students from five university faculties: technical studies, natural sciences, social sciences, arts and humanities, (Ruiz et al., 2010). Using the Trait Emotional Intelligence Questionnaire they compared emotionality of students in social, technical and art sciences. They have conclusions that: a) Social sciences would score higher than technical studies in emotionality, b) arts would score higher than technical studies in emotionality, c) arts would score higher than technical studies in self-control and d) there would be an interaction between gender and faculty, whereby female students would score higher than male students within the social sciences only.

Researchers have shown that successful leaders are individuals with high level of emotional intelligence, (Hamza et. al., 2010). They have the ability to effectively use their emotion in managing challenges and obstacles that they face both at the personal as well as professional levels. This article reports a study conducted to explore possible relationship between emotional intelligence, emotion focused solution and leadership among final year colleague students (n=740) studying in five different universities in Malaysia.

These interventions can be adapted by individuals in the helping profession to help college students become better leaders.

Using fuzzification of cases for improved treatment of stress was analyzed by Shahina et. al., (2010). Finger temperature is measured by using the sensor attached with the little finger of the non-dominant hand of a person. They suggested to utilization of this system to monitor their stress levels.

Robots are expected to work extensively as assistants of humans in various activities, (Rani et al., 2002). With this in view, a novel affect-sensitive architecture for human-robot cooperation is presented in another paper where the robot is expected to recognize human psychological states. Authors presented a technique which involves real-time heart rate monitoring, signal processing using both Fourier Transform and Wavelet Transform, and inferring the stress condition based on the level of activation of the sympathetic and parasympathetic nervous systems using fuzzy logic. This stress detection technique is expected to be useful in the future human-robot cooperation activities, where the robot will recognize human stress and respond appropriately.

Wessel and his group (2008) describe and compare the Emotional-Social Intelligence (ESI) of students in nursing, physical therapy and health science programs. They determine the relationship between ESI and each of leadership, caring and moral judgment. The results of this study confirmed the positive relationship between ESI and leadership and suggested that ESI may be an important construct in caring. There were no major differences between students in different health science programs, and ESI was not related to moral judgment.

In this paper presents some results on the difference in between boys and girls and their perfectionism scales.

2. STUDY AREA, DATA AND METHODS

Data

Questionnaires include 23 different questions. They circulated to the students. And outputs were downloaded into the computer. Only three questions were taken into account from each questionnaire. Selected questions form questionnaires are presented in Table 1.

Table 1 - Selected questions from questionnaires for evaluation

Q1. The students accept the hypothesis that his/her performance is high in office and university. Degree of agreement (or percentage of agreement) is changing in between 1 and 7. 1 is the lowest and 7 is the highest degree.
Q18. I try to do the things in the best possible way (in the perfect style).
Q23- In general, if I have completed my work to the best of my capability, but I feel that, there is another way of doing it more appropriately.

Methods

This study explains an application of wavelet analyses on social indices. Wavelets mean small waves and were introduced in early eighties. The first studies on this topic were carried on by Grossman and Morlet. It is an alternative method of Fourier analysis. Many time series in geophysics exhibit non-stationary in their statistics, Siddiqi et al., (2010). While the series may contain dominant periodic signals, these signals can vary in both amplitude and frequency over long periods of time. Every where around us are signals that can be analyzed. For example, there are seismic tremors, human speech, engine vibrations, medical images, financial data, music, and many other types of

signals. Wavelet analysis is a promising set of tools and techniques for analyzing these signals.

ANALYSES

Figure 1 shows Wavelet 1D DMeyer Level 6 analyses of questionnaires results (question 1, column 1) for students of Faculty of Sciences Istanbul Commerce University. Question 1 is the hypothesis that accepts the high performance of students at school and office. Categories are changing between 1 (reject) and 7 (accept). The first group of the data (data numbers, between 1 and 61) includes answers given by girls, and the second group of data belongs to boys.

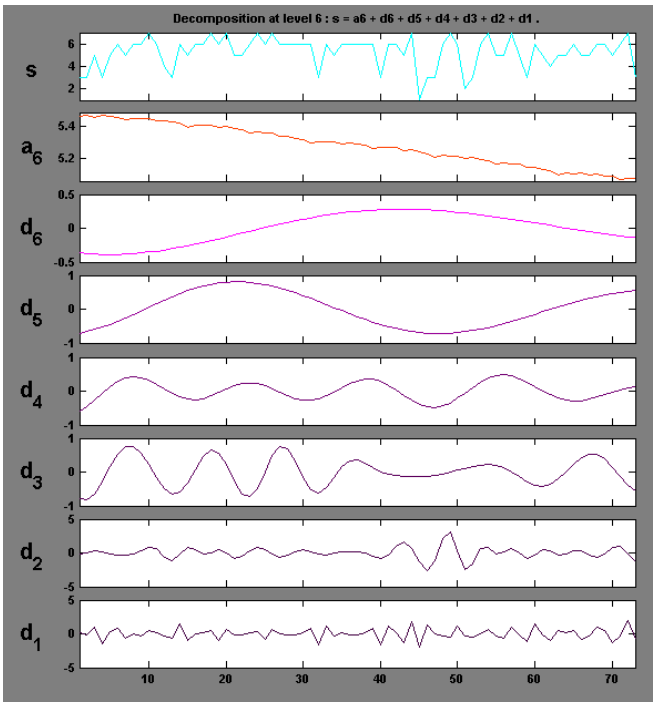

Figure 1- Column 1, Wavelet 1D, DMeyer, Level 6

Figure 1- Question 1: The students accept the hypothesis that his/her performance is high in office and university. Degree of agreement (or percentage of agreement) is changing in between 1 and 7. 1 is the lowest and 7 is the highest degree based on Wavelet 1D analysis (Dmeyer, Level 6).

Figure 1 shows that some boys rejected this hypothesis but most of the girls accepted it. Answers of girls are similar and there is no big difference with each other. But answers of boys and their selected categories show great difference in between 1 and 7.

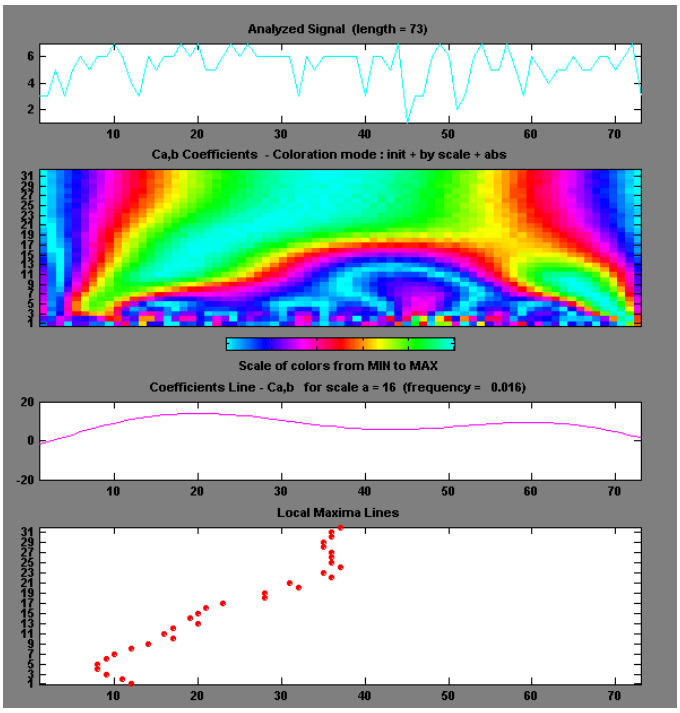

Figure 2- Column 1, Continuous Wavelet 1D, Mexh, Level 1

The extreme values of answers of boys are accompanied by large scale evens for question 1, (figure 2). The students accept the hypothesis that his/her performance is high in office and university. Degree of agreement (or percentage of agreement) is changing in between 1 and 7. 1 is the lowest and 7 is the highest degree). Emotions of girls are under the effects of small scale evens in this case.

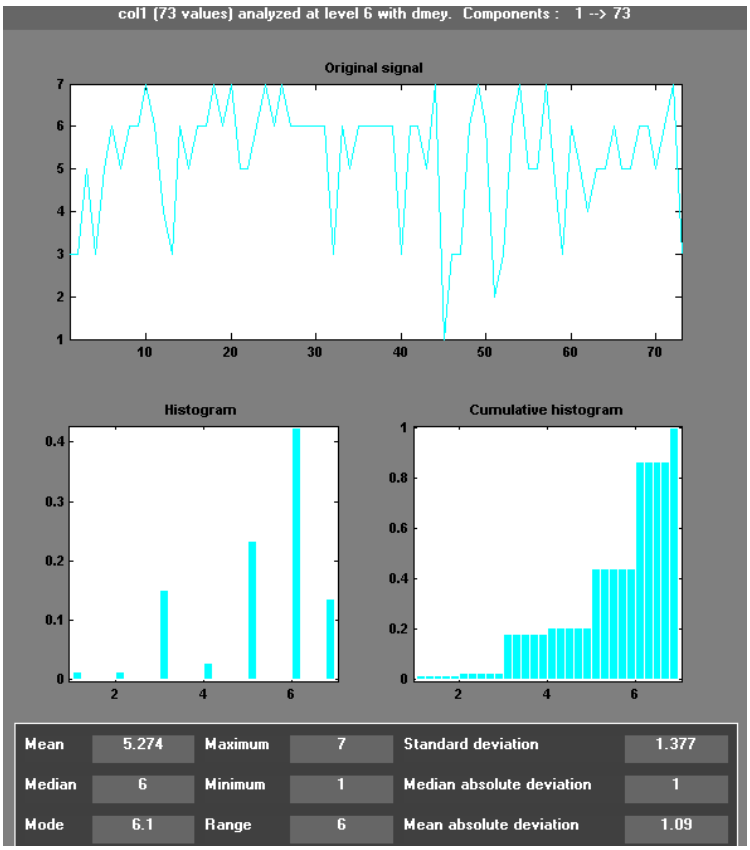

Figure 3- Descriptive statistics for question 1.

Some descriptive statistics for the first question are given in Figure 3. Frequency histogram of answers shows a negative skewness and a bimodal distribution.

The students accept the hypothesis that his/her performance is high in office and university. Degree of agreement (or percentage of agreement) is changing in between 1 and 7. 1 is the lowest and 7 is the highest degree.

In questionnaires, 18$^{th.}$ column corresponds to Q18. It decelerates the student's emotion: "He/she tries to do the things in the best possible way (in the perfect style)", (figure 4).

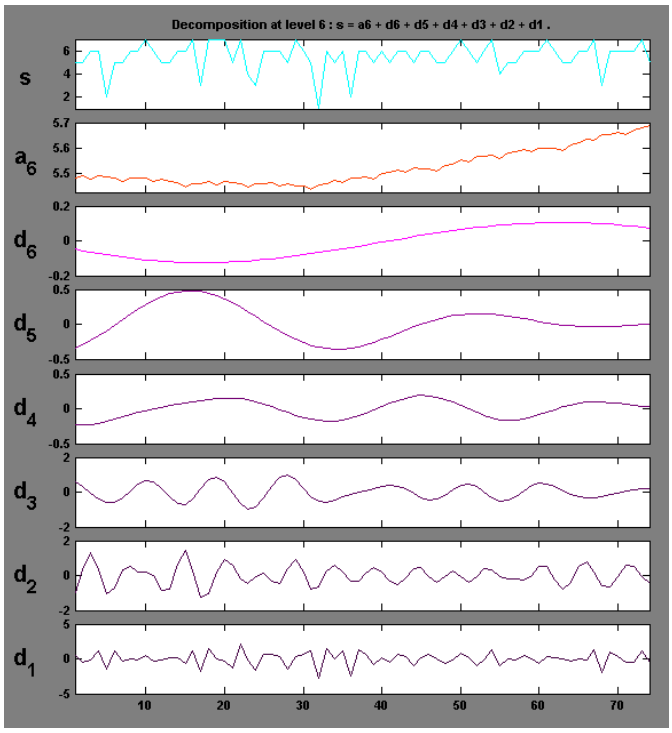

Figure 4- DMeyer, Level 6, Wavelet 1-D.

It is based on scales given in Question 18. Students believe that he/she tried to do the things in the best possible way (in the perfect style).

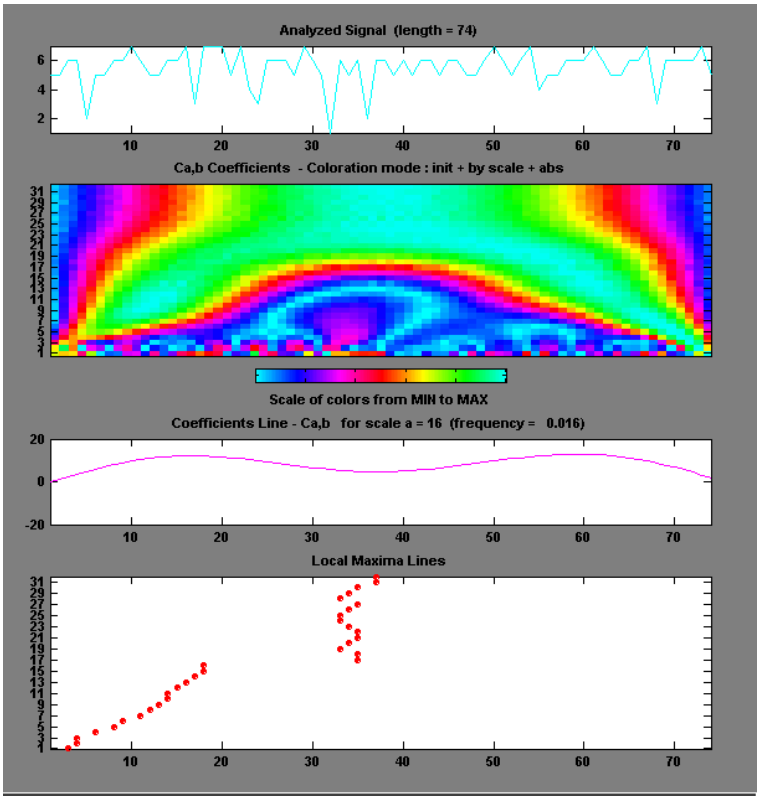

Figure 5- Continuous Wavelet 1-D, Mexh, Level 1 Q18.

Figure 5 shows continuous wavelet analyses of the answers given by students for question 18. Answers given by girls are similar in these questions.

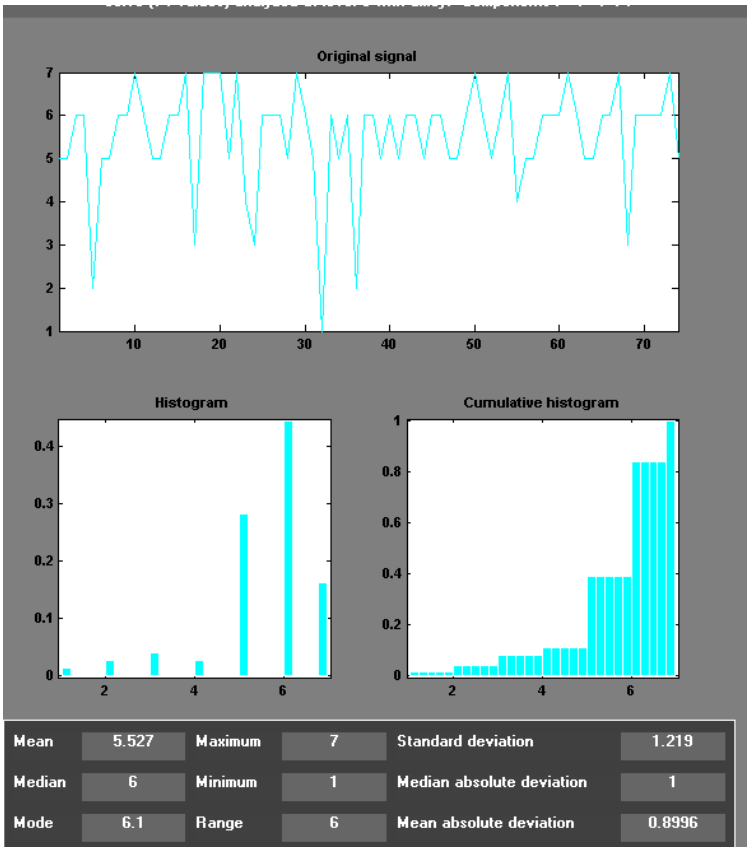

Figure 6- Statistical analyses of question 23.

Figure 6 presents descriptive analyses of answers given for the question 23. In general students agree with the following statement: "If I have completed my work to the best of my capability, but I feel that, there is another way of doing it more appropriately". There is a negative skewness in this distribution. It shows a mono-modal distribution.

Descriptive statistics of Q18 “I try to do the things in the best possible way (in the perfect style)” is presented in figure 7.

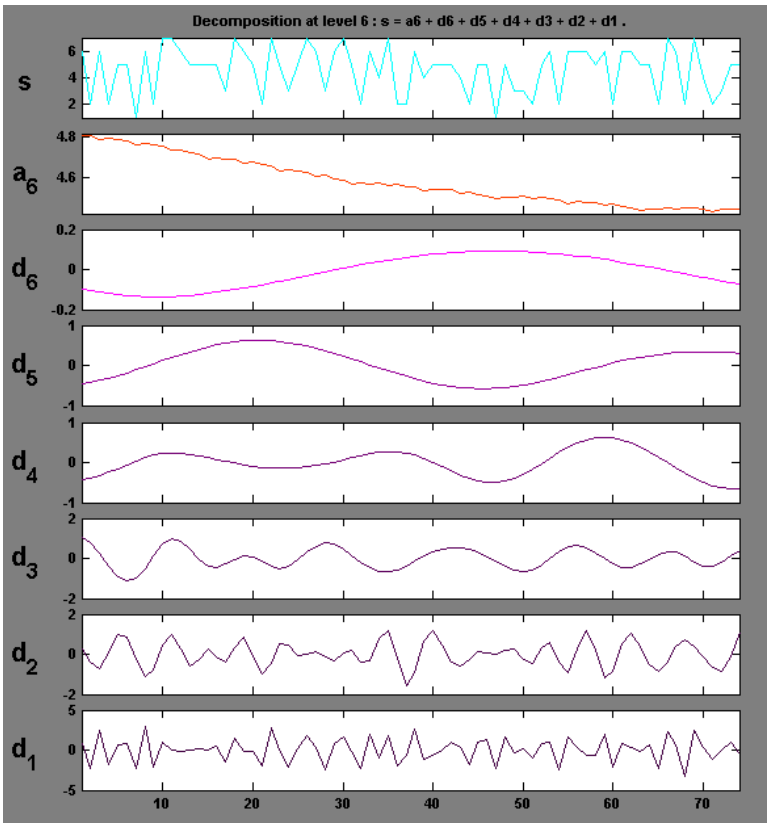

Figure 7- Wavelet 1-D, DMeyer, Level 6. Q18.

1-D Wavelet analyses of the answers given for the question 18 are presented in figure 7. Question 18 confirms that students try to do the things in the best possible way (in the perfect style).

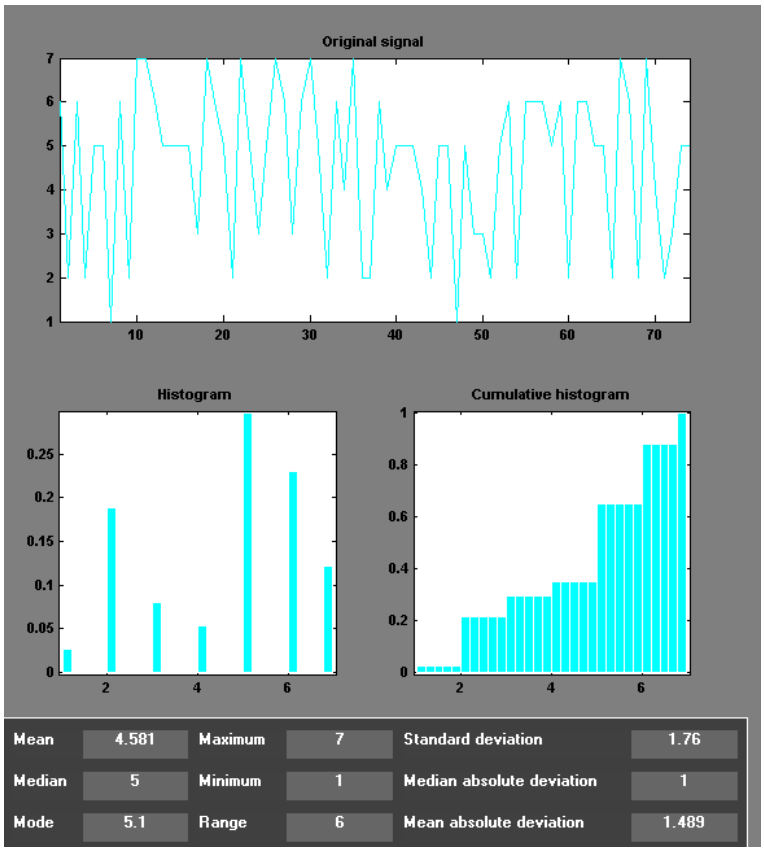

Figure 8- Descriptive Statistics for Question 23.

Question 23 define that in general, if I the student had completed his/her work to the best of his/her capability, but he/she felt that, there was another way of doing it more appropriately. Statistically there is a bimodal distribution. The scales of the questions are in the range of 2 and 5. It explains the different perfectionism scales of all students.

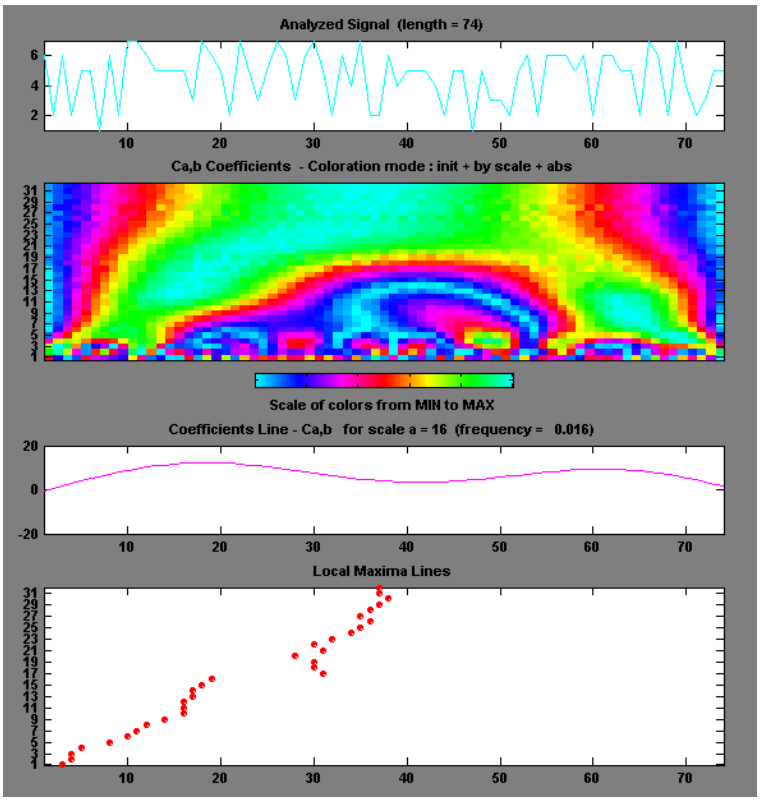

Figure 9- Continuous wavelet 1D-mexh; Sampling1.

Continuous wavelet analyses given in the figure 9 concluded that the large scale evens play an important role on lower perfectionism scales.

RESULTS

The specific results of this study are summarized as follows:

i) There is an important difference in between boys and girls on their perfectionism scales after the Questions1. The students accept the hypothesis that his/her performance was high in office and university. Degree of agreement (or percentage of agreement) is changing in between 1 and 7. 1 is the lowest and 7 is the highest degree.

ii) Decreasing number of scores, are associated with lower perfectionism scales and large scales events.

iii) Higher perfectionism scores explain the existence of lower scale structure.

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