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Motivation and Meaningful Coincidence: A Further Examination of Synchronicity

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Abstract — Male and female, mostly Freshman college students were paired at random, placed in one of three motivational conditions, and asked to discover as many life coincidences as possible in a 45 minute time period. The resulting coincidences were coded by category of event and compared with a larger cohort sample of students to determine the rate of statistically unusual coincidences. It was discovered that while motivational set affected the total number of coincidences found, the rate of unusual coincidences was independent of motivation. The results are discussed in terms of future research for measuring synchronicity in a population of reunited birth relatives.

Keywords: synchronicity — coincidence

Introduction

Orthodox science and Western thinking assumes all cause-effect relationships to be mediated by some form of local interaction: a bat hits a ball, the turn of a key unlocks a door; alternatively that information must have a carrier in some energy form such as radio waves or light waves. These immediate effects following an event come under the heading of "locality" and serve as a basis for everyday common sense beliefs about normal cause-effect, rational interactions. However, Jung (1955) suggested the possibility of another dimension of reality to explain phenomena that we may discard or leave unaccounted, such as the commonalities found between reunited birth relatives. We cannot simply discount these occurrences on the basis of our inability to understand them. Jung postulated the idea of synchronicity to explain these phenomena that do not follow the common sense views of cause-effect relationships.

In describing the essentials of synchronicity, Jung often resorted to examples of ESP-like phenomena. He suggested the existence of two simultaneous states, one a normal or ordinary state, the other a psychic state which is not causally derivable from the first, but whose objective reality is confirmed at a later time. In psychic experiences such as a dream or feeling that a friend has died, it is not uncommon for the feeling or dream to be removed by a short time period, such as one hour, from the actual event of death. In such a case, even though the feeling and the event are not synchronous, they are nevertheless synchronistic.

Causality operates on many levels, but human minds have difficulty conceptualizing beyond the first level (Herbert, 1988; Gatlin, 1977). Tart (1981) thought synchronicity needed to be defined more clearly and explains the difference between several types of causality. As infants, we build an internal map to organize and make sense of the physical world by learning proximity, order, and then causal relationships. Naturally, we try to explain things by understanding their underlying mechanisms. We learn from repeated occurrences, for example when we let go of a ball and it falls to the ground. Tart claims these explanations to be purely psychological. We assume these "causes" to exist in the external world when, in fact, all we experience directly are neural impulses.

Shallis (1983) brings to attention the limited view people are prone to take at times concerning everyday situations. What causes a bus to stop? The person pulling the bell believes that action caused the bus to stop, while the people waiting at the bus stop think they are the reason. The bus driver believes she stopped the bus by pressing on the brake pedal, while a mechanic suggests that friction between brake shoes and brake drums is the reason. One's perspective formed as a result of knowledge gained through cultural and personal experiences is the basis from which we draw conclusions, which may overlook what the actual cause or causes may be (Rowe & Henderson, 1995). The problem of perspective in causal events can be mitigated to some degree by examining only the proximal causes. However, while the friction caused by the brake shoes pressing on the brake drums may be the actual, proximal cause of the bus stopping, it may prove more meaningful to follow the causal event chain further back than that.

Jung also suggested that a desire to find synchronicities or increased emotionality may lead to a higher number of synchronicities found. Emotion plays a key role by creating a bridge between the unconscious and conscious mind (Jung, 1955). Therefore, a distinction needs to be made between increased awareness and meaningfulness when discussing chance and coincidence.

Herbert (1988) defines coincidence as "the simultaneous (or nearly so) occurrence of two or more causally unconnected events that are significantly linked by the person to whom the coincidence occurs as being meaningful" (p. 134). For example, Car A collides with Car B. The reason for this happening involves many events. The driver of Car A previously spilled coffee on himself that morning and delayed his departure, resulting in his arrival at the scene of the collision at the exact moment as Car B; if the driver of Car B had not been distracted by thoughts of Vietnam memories, he would have been paying more attention to where he was driving and not have collided with Car A; if the traffic light on the road that Car A was on would have turned a moment sooner, again the cars would not have met; and so on. That is, viewed as a consequence of all possible causal factors, any specific event could be seen as extremely unlikely. These chance events had the end result of a collision. This event of a car accident does not strike us as unusual or amazing, even

though the chance of these two cars meeting at a precise moment is statistically extremely unlikely. However, if the driver of Car A had been in the same Army unit in Vietnam with the driver of Car B, we would most likely view this as an unusual coincidence. This is a result of connecting meaningfulness to the incident (Shallis, 1983).

We also would not consider it amazing that a person sitting at a desk sees a blue Ford drive by. But if precisely at the moment before the car passed by the person had thought "whatever happened to that old blue Ford I sold 8 years ago," and then saw the same car go by, such a coincidence would likely be seen as amazing. However, noticing this event might have been due to increased awareness due to thinking of the blue Ford at that time, when in fact that Ford may pass the window several times a day.

These two examples highlight the difficulties of separating statistically related coincidences from true synchronicities. It would be virtually impossible to statistically analyze the true probability of such chance occurrences as noticing the blue Ford passing by because, to do so, it would be necessary to chart how many times that Ford passes by the window, how often the ex-owner sits at the window, at what time of day, how often the ex-owner thinks about the car — a virtually endless stream of events. Likewise, for Cars A and B colliding, the chance of either car colliding with another may be only slightly more or less possible. The influencing factors are simply too numerous to calculate.

Herbert (1988, p.129) noted that "Causality and chance are only ways of describing what is believed known and unknown." A mistake could also be made in attribution of randomness to events that are not. A random event such as radioactive decay has no discernible pattern and it is impossible to predict which of a large number of atoms is going to decay in any given time period. On the other hand, the overall average rate of radioactive decay is known with considerable precision. We can use the rate of radioactive decay as a model for randomness. But if we should so happen to find a way to predict the activity of individual atoms, then it would no longer be random. It may be that we are not looking at the big picture, as seen in the example of a pattern detected in a series of ten thousand numbers that is not detected in one hundred numbers. In such cases it would be unenlightened of us to assume randomness of occurrences we cannot explain.

By the same token, we should not attribute cause and purpose where there may be none. For example, the average number of dog bites per day in New York City remains fairly constant from day to day. Although the full pattern is well-ordered, there is no apparent cause that links each specific dog bite incident to the next. Thus, one could not discover the number of people bitten thus far in one given day and, should that number surpass the average, have any confidence that there is no possibility of being bitten for the rest of the day. Applying such a rationale would be ridiculous. Even though the probability of a coin landing on heads or tails is calculable and subject to being predicted for

large sample averages, there still is no reason that it should land on either side on any given toss based on previous tosses.

It is necessary to keep such examples in mind when considering new paradigms to explain what Jung described as synchronicities and to accurately account for them. In a previous paper, Rowe and Henderson (1995) devised a methodology for determining a baseline rate of statistically unusual coincidences in a given population. However, for that method to be useful in a population with high motivation to find such coincidences, such as one might expect in a population of reunited birth relatives, it must be shown to be robust with respect to motivation. That is, it is unlikely that the motivational set of reunited birth relatives could be matched in a cohort population of strangers. The current study is an attempt to both validate the methodology previously used and examine the effects of motivation on the frequency of discovered statistically unusual coincidences.

Method

The methodology used in both parts one and two of the experiment is essentially the same as used previously by Rowe and Henderson (1995) with the addition of a motivational independent variable in part one.

Part One

Participants

Participants in part one of this experiment were all students taking the introductory psychology course at the University of Wisconsin — Stevens Point in the Fall, 1995 Semester. All students in that course must complete a Human Subjects Pool requirement which they can satisfy by being participants in experiments. Sign-up sheets, which include a general description of the experiments and any special requirements, are posted periodically.

For this experiment, participants were required to be 18 or 19 years old and to not know any other person already signed up for their time slot. They were recruited in same sex groups, four participants per time slot. A total of 72 pairs of students (36 each male and female) were tested. Each group of four participants was randomly assigned to one of three motivational conditions on the day of testing.

Apparatus

The participants were placed with their partner in one of two small multipurpose experimental laboratory rooms. Each contained a padded chair for each subject, was carpeted, and had two permanently mounted video cameras with lenses covered in corners near the ceiling. One subject was handed a clipboard and a pen along with written instructions.

Procedure

Two Senior undergraduate psychology majors served as research assistants. Each subject was greeted in a small anteroom for the experimental laboratories. In the cases where one subject did not show up at the appointed time, another subject was randomly chosen to participate. The assistant confirmed that participants were all strangers to each other and assigned pairs at random from the group of four.

Each pair was then placed in a laboratory room. They were instructed to talk with each other in an attempt to find commonalities in their lives. The written instructions for each condition can be found in Appendix A. The instructions for the control group were identical to those in the previous study. However, the other two groups had a paragraph inserted designed to induce higher levels of motivation. In one group it was suggested that the results would provide a personality measure and could be used to assist them in making a career choice. In the other, they were given an expectation of an unrealistically high number of coincidences to find. In this case they were told that the average pair found 55 or more coincidences, a number that was two standard deviations above the mean found in the previous study.

The assistant also pointed out to them that lens caps were covering the camera lenses and that they were not being observed or taped. They were then left alone for approximately 20 minutes. The assistant then reentered the room and presented the subject pairs with a list of topics that might include areas of commonalities. A copy of that list can be found in Appendix B. At the end of another 20 minutes, all of the data were collected and the participants debriefed and dismissed.

The responses from each of the subject pairs were coded for type of coincidence and entered into a database by the research assistants. The assistants were given training on the coding process and eventually produced an interjudge reliability of 1.00. The six categories were: 1. personal data over which the subject has little control (information about the subject; things that happened to the subject, *e.g.* names, skills, weaknesses, objects received as gifts, illnesses); 2. personal experiences generated by choices made (things the subject chose to do once or twice, including activities that only involve one "choice," even though they may occur regularly after making the choice, *e.g.* non-family vacations, jobs, educational activities, life or future occupational plans); **3.** family based experiences (experiences the subject had because of living in a particular family, *e.g.* family vacations, religion or religious celebrations, relatives' common experiences, family members' occupations); 4. personal habits (things the subject chose to do regularly, things the subject plans to do in the future, good or bad habits and peculiarities, *e.g.* tastes in food, music, ***etc.,*** likes or dislikes, recreational activities); 5. items owned (anything possessed, purchased or acquired by the subject, *e.g.* any form of property, including pets); and 6. personality factors (aspects of character,

temperament or values, *e.g.* sense of humor, promptness, honesty, chastity, outlook on life, preference for time of day).

Part Two

Participants

Participants in part two consisted of 114 Male and 164 Female 18 and 19 year old students recruited in the same manner as in part one. The unequal number of participants by sex was caused by the voluntary nature of the recruitment process. Each of these groups were further divided in half by random assignment.

Apparatus

The apparatus consisted of a list of descriptive statements generated from the commonalities identified in part one. The participants were handed this along with a pencil and answer sheets and allowed to find their own place to sit in a lecture auditorium. Each of two Female sets had 364 statements and each Male set had 409.

Procedure

The initial list of 2,656 commonalities generated by the 72 pairs of participants was reduced by removing items which could not be coded for individual participants (*e.g.,* responses such as "Both know the same guy from Wausau," something that would be meaningless to an individual trying to answer true or false of themselves) or, more commonly, redundant responses (*e.g.,* "Favorite color is green," used 5 times) to arrive at a list of 728 items generated by female pairs and 818 by male pairs. This was judged to be too long a list for any one subject to go through, so each of these lists was randomly divided into two lists and assigned at random to half the participants.

The participants were instructed to answer **A** if a given statement was true of them and B if it was not true. In cases where they could not be sure or there was any confusion about what the item meant, they were instructed to answer B.

Results and Discussion

There were two sets of data generated. One set consisted of the total number of commonalities found by each pair of participants. The other was a subset of statistically unusual commonalities. This subset was determined by using the frequency of items marked as true by 22 percent or fewer of the cohort population measured in part two. That is, if an item is true of less than 23 percent of a population, then the chance that two persons paired at random will share that item is less than .05.

An analysis of variance performed on the number of total commonalities found by pair in part one revealed several significant effects. Each of the main

effects of motivation ($F_{(2,66)} = 4.54$) and code ($F_{(5,340)} = 123.27$) were significant at the $a = .05$ level, although sex was not significant. Likewise, there were significant interactions between sex and motivation ($F_{(2,66)} = 4.70$), sex and code ($F_{(5,340)} = 3.43$), and code with motivation ($F_{(5,340)} = 2.80$). However, an examination of sex by code and code by motivation interactions reveals only minor differences, and that the pattern of responses across conditions were very similar. Therefore, despite reaching statistical significance, the actual differences found were deemed not to be meaningful when the size of the data set was considered.

The significant effect due to motivation was almost entirely due to an increased number of coincidences generated by the motivational set that suggested the student pairs should be finding a large number of coincidences. The other motivational set, suggesting this could be used to help determine a career choice, was not effective in increasing the number of discovered coincidences. Anecdotal evidence reported by the research assistants confirmed that this instructional set was not an effective motivator.

Of more interest is the significant interaction between sex and motivation. This is presented in Figure 1. It appears that the male participants were not much affected by motivational set and, paradoxically, their highest total was produced by the control condition. On the other hand, females reacted strongly to the set suggesting they should find a large number of coincidences. In the two remaining motivational conditions, their total was below that of males, a result which is in accord with the first study.

In terms of the significant code effect, the numbers are in close correspondence with the first study. The largest number of hits occurred in the personal habits category accounting for 38.9% of all responses as compared to 41% in

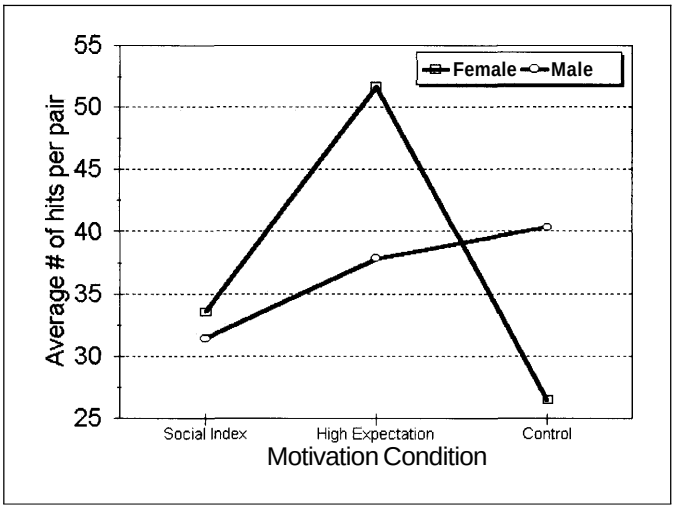

Fig. 1. Interaction of Sex with Motivation for total number of coincidences found.

the first study. The next largest number occurred in chosen personal experiences with 21.3% of hits *(versus* 18.7% in the first study), then family based experiences with 16.3% *(versus* 10.3%), followed by a tie in personal data and personality with 8.9% each *(versus* 15.4% and 8.4% respectively). The possessions category was in last place with 5.6% of the hits *(versus* 5.8%). The small variation between personal data and family based experiences between the two studies most likely comes from a minor revision in categorizing these two types of events between studies. The close correspondence between the other categories strongly suggests that, when using these categories of events, there is stability across time within this population. Note, however, that the preponderance of hits in the personal habits category may be a function of the experimental situation itself and the restricted subject population.

When the data for significant coincidences were analyzed, a very different picture emerged. The only significant effect was that for category of event ($F_{(5,330)} = 23.56; p < .05$). There were no other significant main effects or interactions. Furthermore, the pattern of significant coincidences was quite different from that of total hits. The most common category here was personal experiences generated by choice accounting for 32.9% of the hits, then family based experiences with 25.6% of the hits, and personal habits in third place with 19.9% of the hits. The next three categories in order were personal data with 12.0%, items owned with 7.3% and personality with only 2.2%. A Newman-Keuls test indicated that all pairwise comparisons between categories were significant ($p < .05$) except for family based experiences compared with personal habits, personal data with items owned, and items owned with personality.

A comparison of average number of hits by category for each data set is presented in Figure 2.

General Discussion

In the present study there is no reason to believe there were true synchronicities in the Jungian sense when the rare coincidences were observed. Instead, they would most likely fall into the category of synchronisms — mere coincidental events. However, had there been an actual connection between the pairs of subjects, such as in a population of reunited birth relatives, many of these coincidental events would likely be labeled synchronicities by the parties involved. It is therefore paramount to determine a methodology that allows one to discriminate between the occasional rare coincidence and a true synchronicity.

Perhaps the most interesting aspect of these results comes from a comparison between the pattern of total hits by type of event with the statistically unusual hits. These patterns are quite different. By far the largest category of total hits was that of personal habits, a category that encompasses likes and dislikes. That is not too surprising since all pairs of participants and their cohorts come from the same restricted population group, and it could be assumed

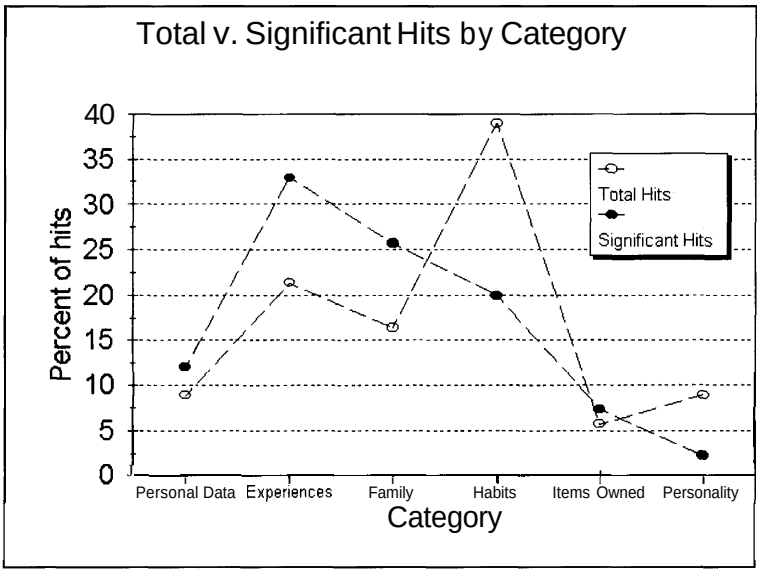

Fig. 2. Comparison of percentage of total coincidences with statistically unusual coincidences as a function of category of event.

that culture is a major component in producing likes and dislikes. However, when the measure is the frequency of statistically unusual hits, this was only the third largest category, and personal experiences was by far the largest category.

The marked similarity of the patterns of significant hits with the first study combined with the marked dissimilarity between the pattern of significant hits and that of total hits in both studies suggests that these are independent measures. This independence, in turn, suggests this methodology can be used to compare populations with very different motivational sets.

It is unlikely that any experimental condition could produce the level of emotion felt by reunited birth relatives. Conversely, if motivation affected not only true synchronicities but the relative frequency of synchronous events as well, then it could be reasonably assumed the two measures of coincidences and significant coincidences would not be independent of each other as they appear to be in this study. Thus, it should be possible to match reunited birth relatives with a cohort group who have been paired at random and compare the patterns of significant coincidences. If there is a reliable difference in either frequency or patterns of significant coincidences, then at least some of those coincidences could be evidence of true synchronicities.

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Appendix A

Written Instructions To Participants — Control Group

The concept of synchronicity has been defined by Carl Jung as "a meaningful coincidence of two or more events, where something other than chance is involved." Jung also states that in synchronicity the coincidences are "connected so meaningfully that their 'chance' occurrence would represent a degree of improbability that would have to be expressed by an astronomical figure." There is some thought that synchronous events occur more often in cases of people who are genetically related. Certainly people who grew up in the same family environment would be expected to have a high number of shared experiences, but commonalities in the lives of biological relatives separated early in life by such things as war or adoption have also been noted.

A problem with the concept of synchronicity is that there have been few if any studies in which a "baseline" measurement of the number of common life experiences in non-genetically related strangers has been made. This study is an attempt to determine this baseline.

We realize that you and your partner in this study are not related to each other and grew up in different family environments. We would like you to talk with each other for the next 45 minutes and to look for as many similarities in your lives as you can discover. Please begin on the back side of this paper and list, in as exact a fashion as possible, specifically what these similarities are. Please write the similarities down as you discover them rather than waiting until the end of your discussion.

After you have worked for 45 minutes or so on this task, the experimenter will discuss with you your reaction to what you have been asked to do and will answer any questions you have about the study.

Written Instructions To Participants — Social Index Group

The concept of synchronicity has been defined by Carl Jung as "a meaningful coincidence of two or more events, where something other than chance is involved." Jung also states that in synchronicity the coincidences are "connected so meaningfully that their 'chance' occurrence would represent a degree of improbability that would have to be expressed by an astronomical

figure." There is some thought that synchronous events occur more often in cases of people who are genetically related. Certainly people who grew up in the same family environment would be expected to have a high number of shared experiences, but commonalities in the lives of biological relatives separated early in life by such things as war or adoption have also been noted.

In a study we conducted last year we discovered a second connection with events which seem synchronous: A relationship between the level of synchronicities that unrelated people can discover and a new sociability index. This index may very well be included in a number of new psychological inventories. That, in turn, will allow us to provide you with an evaluation relevant to career choice. Certainly, it is much easier and less costly to obtain this data with our procedure than to take a full psychological inventory.

We would like you to talk with each other for the next 45 minutes and to look for as many similarities in your lives as you can discover. Please begin on the back side of this paper and list, in as exact a fashion as possible, specifically what these similarities are. Please write the similarities down as you discover them rather than waiting until the end of your discussion.

After you have worked for 45 minutes or so on this task, the experimenter will discuss with you your reaction to what you have been asked to do and will answer any questions you have about the study.

Written Instructions To Participants — High Expectation Group

The concept of synchronicity has been defined by Carl Jung as "a meaningful coincidence of two or more events, where something other than chance is involved." Jung also states that in synchronicity the coincidences are "connected so meaningfully that their 'chance' occurrence would represent a degree of improbability that would have to be expressed by an astronomical figure." There is some thought that synchronous events occur more often in cases of people who are genetically related. Certainly people who grew up in the same family environment would be expected to have a high number of shared experiences, but commonalities in the lives of biological relatives separated early in life by such things as war or adoption have also been noted.

A problem with the concept of synchronicity is that there have been few if any studies in which a "baseline" measurement of the number of common life experiences in non-genetically related strangers has been made. This study is an attempt to determine this baseline.

We realize that you and your partner in this study are not related to each other and grew up in different family environments. We would like you to talk with each other for the next 45 minutes and to look for as many similarities in your lives as you can discover. Please begin on the back side of this paper and list, in as exact a fashion as possible, specifically what these similarities are. Please write the similarities down as you discover them rather than waiting until the end of your discussion.

In a study we conducted last year using unrelated persons, we discovered

that the average pair of college students finds 55 similarities. We are currently attempting to replicate that study and hope you will do at least as well.

After you have worked for 45 minutes or so on this task, the experimenter will discuss with you your reaction to what you have been asked to do and will answer any questions you have about the study.

Appendix B

Interim Instruction List

Now that you have had a chance to discuss for a while, we would like you to think about some of the types of similarities that have been identified by others. Be sure to note down when and where you were when you note that a coincidence happened.

Possible categories to cover are: Names (first, middle, family, pets, relatives); Places (vacations; where you want to go); Times or Dates (birthdays; age at a particular experience); Health/Illness (never sick; asthma); Personal interests (hobbies, sports, games, recreation); Education (public school; college major); Tastes in food (love pickles, etc.); Preferences in Art, Music, Clothing, or Colors; Personal hygiene products (toothpaste, deodorant); Habits, good and bad (bite fingernails; always fold clothes); Plans for a career; Personal temperament (slow to anger; impatient; sense of humor); Personality (procrastinate; flexible; always on time); Things owned (large cars, black labs); Religion or Spirituality (believe in God; Muslim).

There may still be many others. Don't let this list limit you.