

# Exploring Intensity Factors and Patterns of Experience

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As information and media diversify, experiential value and emotion creation, which are required to construct deep experience, is increasingly important. After focusing on quality and function, the object that takes humanity, emotion, and value into consideration has become another medium that design communicates with the world. The type of individual experience is indicative of societal change, which is developing diversely. As emotional intervention and experience creation are intertwined with deep individual experience, this study will explore intensity factors and categories that have an impact on influencing the individual experience. The findings can be separated into two sections, including the intensity factors and patterns of Indi-Experience. The first section presents all the factors affecting the level of intensity in Indi-Experiences, which followed the structure of 'Category-Concept-Properties-Dimension'. The second section defines four distinct patterns of Indi-Experiences based on the analysis of cluster analysis and qualification method type III. The result takes in four patterns of deep Indi-Experience, including 'Good Old Times', 'Powerless', 'Empathy-joy' and 'Sudden Upbeat'. After comparing the eight categories of memorable and deep Indi-Experiences, two main patterns could be stretched out. Meaningful objects or unpleasant situations which raise an unchangeable or un-reproduced fact could seem like a pattern that forms one's deep experience. Secondly, 'Empathy-joy' and 'Sudden Upbeat' shows that unexpected experiences lead to positive emotions could be seen as the other pattern.

**Keywords:** *Experience, Individual Experience (Indi-Experience), Intensity Factors, Activity, Kansei*

## 1 Introduction

In the past, industrial design is focused on the functional aspect of products and is oriented toward system efficiency and enhancement. Human experience, emotion, habit, faith, and empathy are often ignored (Chien-Ta Huang & Rung-Huei Liang, 2009). The user-oriented design trend—close to how human operates and experiences and humanisation feelings, emphasises the importance of elevating the interactive process between user and product and creating better experiences (Jhang-Syong You, Pei-Hua Huang, and Yan-Ru Chen, 2009). Thus, creating extraordinary "Interactivity" is beneficial to creating meaningful shared values. Information Interaction Design (Shedroff, 1999) proposes Creating Values, Compelling, and Empowering thru communicating messages is an essential skill that everyone in the new era should possess.

As information and media diversify, experiential value and emotion creation, which are required to construct deep experience, is increasingly important. (Hsu, C. S., 2016) After

focusing on quality and function, the object that takes humanity, emotion, and value into consideration has become another medium that design communicates with the world. The individual experience itself could not be explored thorough simplified model considering the elements in the real world, such as time, space, physics, contexts, and signs (Chien-Ta Huang & Rung-Huei Liang, 2009). Even though the concept of “Interactivity” has no clear definition and measurement method. (Rafaeli & Ariel, 2007, Ariel & Avidar, 2015) The depth and quality of interactivity (which constructed experiences) do not have a clear definition in the current stage, while the interactive design is also a new field that rarely defined and categorised (Shedroff, 1999).

The type of individual experience is indicative of societal change, which is developing diversely. As emotional intervention and experience creation are intertwined with deep Indi-Experience, this study will explore intensity factors and categories that have an impact on influencing the individual experience.

*The research objective is to explore the intensity factors and patterns of Experiences.*

### **1.1 Research Scope and Limitation**

To acquire a holistic sampling of individual experience for analysis, the data points adopt in the research are not limited to specific scenario and sequence. This research focuses on the past experiences of interviewee instead of the Indi-Experience when conducting the experiment. The group interview is conducted in a way that interviewees could freely state their past experiences, and the researcher does not imply and intervene in the narration process. This stating personal memory is called Episodic memory in Psychology, which relates to the memory of human, event, time, place, and object. Since the research process is of sharing experiences based on interviewee’s willingness, the accuracy of memories is thus concerned. Nonetheless, the twist of memory as a result of implication is not in the discussion of this research.

## **2 Literature Review**

Based on the relevant literature, theories, this chapter can be divided into three key parts. In this chapter, research on experiences, activities, statistics and analysis methods applied in this research would be discussed and following by a brief commentary in the end.

### **2.1 Experience**

This section will discuss the correlation between "*individual experience*" (related to First-hand, personal experience) and "*experience*" (related to Mental structure, Schema), and its differences. The relevant literature is discussed below.

#### **2.1.1 Individual Experience (Indi-Experience)**

Kelly (1987) considers “Individualized Experience” is not merely simple or pure senses, but an explanatory sense toward behaviour. Schmitt (1999) points out that experiences are individual events that a single person reacts to specific stimulation, including the overall nature of life. Individual experience is derived from direct observation of or participation in events, whether the event is real, dreamlike, or simulated. Pine and Gilmore (2011) mention in the book of “The Experience Economy” that individual experience is a fantastic feeling generated when an individual’s conscience reaches specific emotional, physical, intellectual or even spiritual levels. Two different individuals would not go through the same individual experiences even if they participate in identical events since individual experience is a process of individual associating “mind activities” and “events”.

### 2.1.2 Experience

The American philosopher and educator John Dewey define “Experience” as a “product” from the interaction between man and environment. As the interaction is an ongoing process and an activity that never ends, therefore man’s experience will reconstruct and rebuild continually. In an ordinary concept, experience includes the scope of “Knowledge” and “Skill”; it is an output from experiencing or observing a particular event and could be applied in later parts of work. The storage and application of experience could be associated using Schema Theory from a psychology standpoint.

### 2.1.3 Preliminary Summary

This section focuses on the literature review of individual experience (Indi-Experience) and experience, which indeed are two sides of a thing. Based on the extensive review of the psychological perspectives, the experience is the foundation to construct and shape knowledge, value, and belief, and further, affect the generation of behaviour. The experience is also the basis to justify Indi-Experience at the time being. Because of the differences in experiences, two different individuals would not have identical individual experiences even if they participate in identical events since Indi-Experience is the process of association between the personal experience and the event. In essence, experience affects the Indi-Experience, and Indi-Experience also further shapes Indi-Experience.

In order to understand the intensity factor and type of experiences, this research will focus on capturing the experience that is participated in person (self-explanatory). Through conducting a workshop (focus group interview), the research will use the single Indi-Experience as the unit of capturing the experiences and as the foundation for further studies.

## 2.2 Activity

The research will discuss “Activity” as the unit of analysis to examine the experience and apply activity theory as the main argument in this section. The activity referenced in the research is the overall perspective of an event, including the subject, object, and mediating artefacts.

### 2.2.1 Activity Theory (AT)

Activity theory (AT) originates from the research of linguistic and psychology by Russian psychologists Vygotsky and Rubinstein; it could be considered as a theoretical structure as well as a methodology. The meaning of the word is not merely activity, but also contains the connotation of events and activities that are meaningful. Vygotsky questions the contemporary well-received Stimulus-response Model as he points out that human activities are meant to have purposes, and activities would be completed using physical or psychological “Tools” (Hasan & Kazlauskas, 2014).

The core of the activity is formed by the relationship between subject and object (See Figure 1) under the development of activity theory structure, and the resulting outcome of activity could be produced either of intended or unintended.



Figure 1 The Core of Activity

The object, which functions as the deed of the doer under this structure, is not limited to physical entities but also includes societal and cultural entities. Although our sensory module cannot proceed with these societal and cultural objects, we could nonetheless utilise them and sense the existence, and as a result, both physical and mental activities have its functioning deed.

### 2.2.2 Preliminary Summary

This study discovers the depth and type of experience using the activity as the unit of analysis, and through the literature review of activity theory, the research demonstrates that three components of activity are subject, object, and outcome. Involved meditation must be considered and evaluated in the interaction process between the subject and the object.

## 3 Experimental Methods and Procedure

This study was conducted by qualitative research technique for understanding the intensity factors and discover appropriate categories of experience. Following the last chapter, a preliminary theory model was built through the literature reviews. In this session, the experimental design and structure (3.1) will be discussed, including the method of data collection (3.2) and analysis (3.3).

### 3.1 Experimental Design and Structure

This experiment included two main phrases, data collection and analysis. In the phrases of data collection, the researcher held four experience sharing workshop (focus group interviews) for gathering the first-hand experience as preliminary data (See Figure 2). Each workshop contains steps of ‘experience collection’ and ‘experience sorting’ by order. Workshop participants will share and note their own experiences, which for the use of experience sorting.

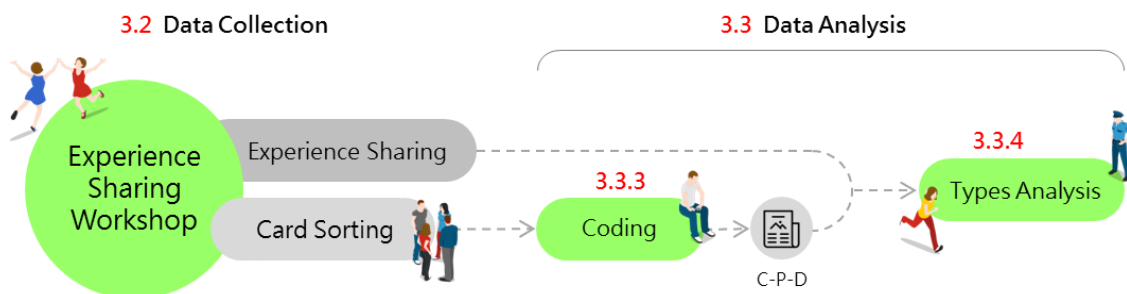


Figure 2 The procedure of Data Collection and Analysis

Moving down to the next part of the experiment, the phase of analysis is conducted by coding and type analysis. A code team is established at the beginning of this stage. There are five coders in the team consisted of 4 graduate students and the author. All the vocal data from the interview will be transferred into transcripts in order to be analysed by coders. C-P-D (Categories-Prosperities-dimensions) structure will be established by conceptualising raw data and re-categorising them in order to build a meaningful structure for understanding the intensity factors of experience. Types analysis will use the factors in C-P-D structure to categorise experiences and contextualise phenomenon.

### 3.2 Data Collection Procedure

In this section, data was collected from 'experience sharing workshop' (see 3.2.1) by adopting focus group interview techniques. There were two phases of this workshop: (1) Experience Sharing and (2) Card Sorting.

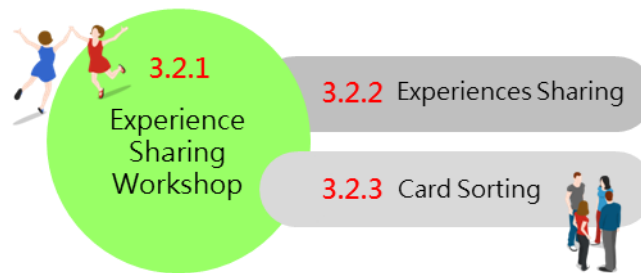


Figure 3 Structure of Focus Group Interview

#### 3.2.1 Focus Group Interview

Details of the workshop will be included in this section, including participants, environment and equipment, workshop procedure and collected data. In this study, a total of four experience sharing workshops were conducted, and a total of 31 participants were interviewed within the focus group. Ninety-six experiences were gathered within four workshops, and four evaluated results were presented by the card sorting period.

##### 1. Interviewee Sampling

Participants' selection is a vital part of qualitative research. The design of the focus group interview follows the principle of high homogeneity in groups in order to create a good interaction within the group and encourage them to talk freely. In the other hand, to control and grasp fruitful opinions and experiences, a total of four experience sharing workshop was built. As consideration of the workload of each participant, each workshop invited approximately 7-9 participants, which slightly higher than traditional focus group interview.

The composition of the workshop participants is shown in table 3-1. Participants' age ranges from 20 to 30, and most have a bachelor degree or above. More than 60% of the participants have formal working experience. Table 3.1 shows more details of the participants.

##### 2. Environment and tools

The workshop (interview) environment shown in Figure 3.3. Interview environment is an independent space which can effectively prevent external noise. Participants were seated around the table while the moderator (researcher) seated at the end of the table. The arrangement of the seat ensured that each participant could receive the guidance of the moderator for enhancing the efficiency of the interview and can see each other's facial expressions and body language for reducing the occurrence of semantic misunderstanding. Also, the temperature had been set around 25 degrees Celsius for making sure the workshop will be in a comfortable environment.



Figure 4 Environment of Focus Group Interview

In order to limit the error of transcripts during transferring from sound-recorded data, cameras were set up in both sides of the workshop space, taking video records of each workshop (focus group interview).

### 3. Interview Procedure

The workshop was run by the framework of the focus group interview and controlled within two hours. The experience sharing workshop is divided into three stages: (1) Introduction, (2) Experiences Sharing and (3) Card Sorting. See Figure 5 for the overview of the focus group procedure.

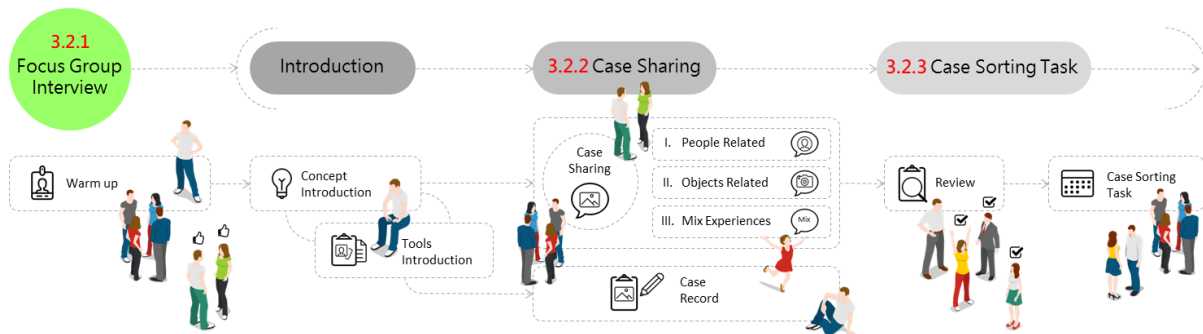


Figure 5 Focus Group Interview Procedure

#### 4. Collected Data

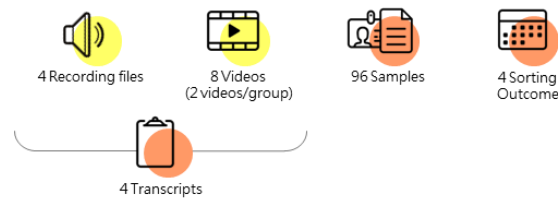


Figure 6 Data Collection

This study conducted a total of four workshops. The collected data included four recording files (sound recording only) and eight videos (2 videos per each workshop). Also, 96 experiences were gathered within four workshops, and four evaluated results were presented by the card sorting period. The video and sound recording data are only for research purposes. All vocal data from the interview will be transferred into transcripts by the researcher for further analysis. (See Figure 6)

#### 3.2.2 Experience Sharing

The Experience sharing session of the workshop encourages our participants to deliver and share their own impressive experiences. After personal experience sharing, note cards were prepared for participants to record their own experience for the next phase of the workshop. In order to better capture 'impressive experiences' from participants and make the discussion more concrete, sharing stage was divided into three parts included (I) people related experience, (II) Object related experiences and (III) Mix experiences as Figure 7 presented.

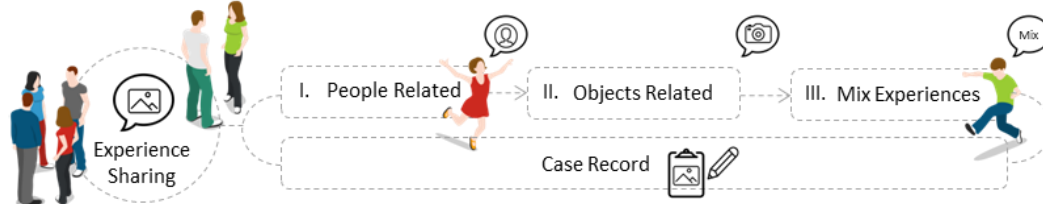


Figure 7 Procedure of Card Sharing Section

#### 3.2.3 Card Sorting

The card sorting session aims to understand how participants define their own experience as deep or shallow. First, the moderator led participants to review and read over their own experiences, which had noted on the notes cards. After all the participants ran through their experiences, they were asked to do 15 minutes' card sorting task. In this session, participants need to cooperate and exchange their ideas of how to differentiate deep experience with shallow one (See Figure 8).



Figure 8 Procedure of Card Sorting Section

As Figure 9 shown, the example of note card has three filled-in space with three main questions, included 'Object', 'Event' and 'Feeling'. The note card is designed to let participants record their own experience and can easily share with others.



Figure 9 Card Example (in Mandarin)

### 3.3 Data Analysis

This study adopts the technique of qualitative coding for data analysis. All the vocal data were transferred into transcripts for better analysis. In order to acquire robust and rich insights from first-hand data, this study takes on similar steps of open coding and axial coding process original from grounded theory. In the coding process, all the data and field notes were reviewed and coded line-by-line in order to capture all the possibilities during the focus group interview. After several discussions with the code team, all the labelled codes captured from transcripts will be put in the model transformed from activity model and multi-store model.

#### 3.3.1 Code Team

For better reliability, a code team was established at the beginning of the coding session. All of the data, including transcripts and video recording, were reviewed separately by coders to avoid mutual interference.

There are five coders in the team consisted of four professionals and author. Merely all the coders have a different background, including psychology, literature and design. In order to acquire suitable coders for this study, all the coders had attended the experience sharing workshop held beforehand and know about the procedure of the workshop. All coders were received coding instruction and done a preliminary coding session before the formal coding session started. Code team was organised as table 3.2 presented.

Table 1 Code Team

No.	Gender	Education	Occupation
01	M	Bachelor of Design and Psychology MS student	Designer
02	F	Bachelor of Design	Production Manager Designer
03	F	Bachelor of Taiwanese Literature	Junior High School Teacher
04	F	Bachelor of Psychology	MS student
05	F	Master of Design	Designer / Secretary



### 3.3.2 Coding Procedure

The coding procedure used in this study can separate into two sections, (1) labelling section and (2) Categorizing section. (See Figure 10)

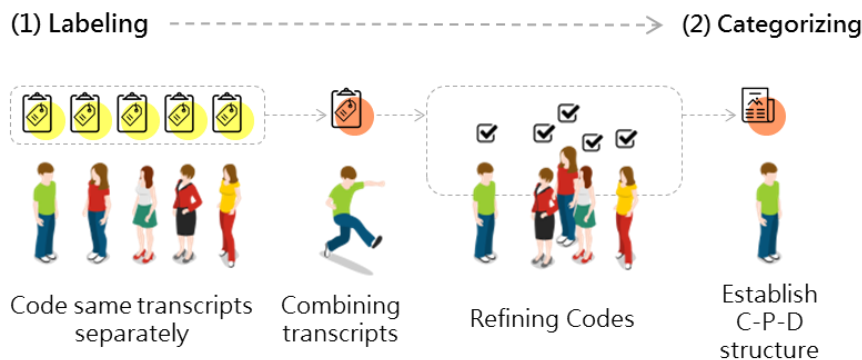


Figure 10 The Procedure of Open-Coding

In the labelling section, all the data was reviewed and coded line-by-line by each coder separately. In a total of four group interviews were coded by a code team in this section. The data was labelled as much as possible and open to all the viewpoints and different interpretation of the original conversation. After collecting all the labelled transcripts, the author generated a combined transcript that put all the labels together as appendix B shown. After, researcher and each coder met separately to refine codes and discuss all the codes (include other coders) on lists to get the prevailing consensus.

In the categorising section, the researcher has to structuralise labels and categories generated from the last section by the researcher's thoughts and ideas. This section followed the structure of 'Categories-Properties-Dimension' to relate all the labels and form a new structure of experience's intensity.

### 3.3.3 Type Analysis

After the coding session, this study looked further into the classification of experiences by applying the cluster method and quantification method (type III). By applying the outcome from the coding section, the researcher took intensity factors as a measurement to score participants' experiences gathered from the workshop. Types of experiences will be discussed in the next chapter. The score of each factor shown in Appendix A.

## 4 Findings

Following the study of intensity factors in the previous chapter, the result of the analysis will be discussed in three parts in this chapter. The first part is a basic understanding of how to experience depth is being defined based on the results of card sorting in experience review. The second part organises Categories-Properties-Dimensions (C-P-D) coding method and discusses the potential variables that affect the intensity factors. The third part provides the cluster analysis toward the deep and shallow cases and finds out how networks between intensity factors that affect experiences are formed.

### 4.1 Capturing Intensity Factors within Card Sorting

This study holds four groups of focus group interviews, and a 15 minute of card sorting phase that only focuses on the cases of each specific session is arranged at the end of each interview. The results of card sorting in the four sessions are analysed as follow.

Participants classify the experiences based on the level of depth in the card sorting phase in group 4. It could be inferred that the intensity factor is a continuous dimension, and an intensity spectrum could be constructed by comparing one to another. (See Figure 11)

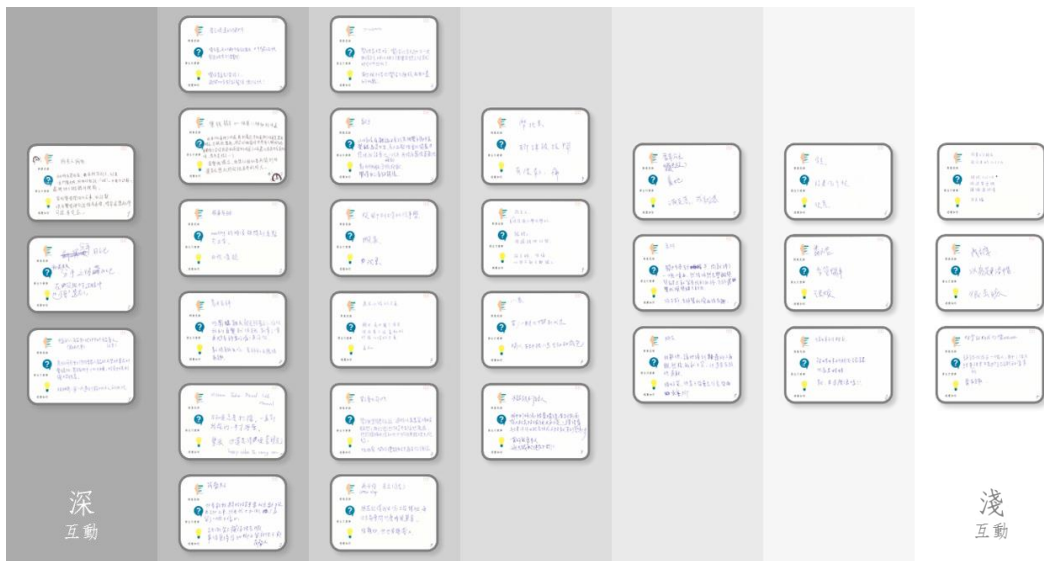


Figure 11 Card Sorting Result of Group 4

The classification structure of card sorting outcomes in group 1 and 3 (See Figure 12) are different from that of group 4 (Figure 11). There is a distinct binary classification between deep and shallow in group 1 and 3 in terms of the plot of event or emotion. Similar cases would be classified into the same group to review intensity and would become the basis for sorting.

Items appear between deep and shallow binary classification in sorting event of group 1. A “medium” item connects deep and shallow areas and constructs a continuation layer. Also, “unclassifiable” items imply that other variables exist in deep and shallow classification.

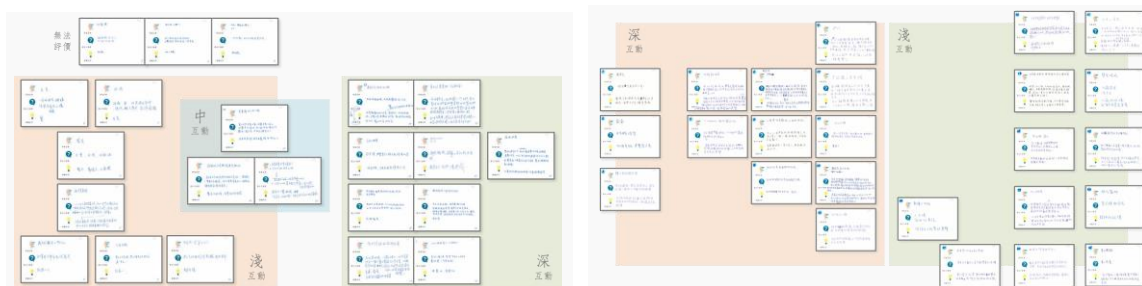


Figure 12 Card Sorting Result (above: Group 1; below: Group 3 )

The participants use the x-y axis graph to review and classify each case by two-dimension – physical experience strength and psychological impact intensity. (Figure 4.3) Participants could, therefore, classify intensity factors clearly, and unclassifiable items do not appear in the group.

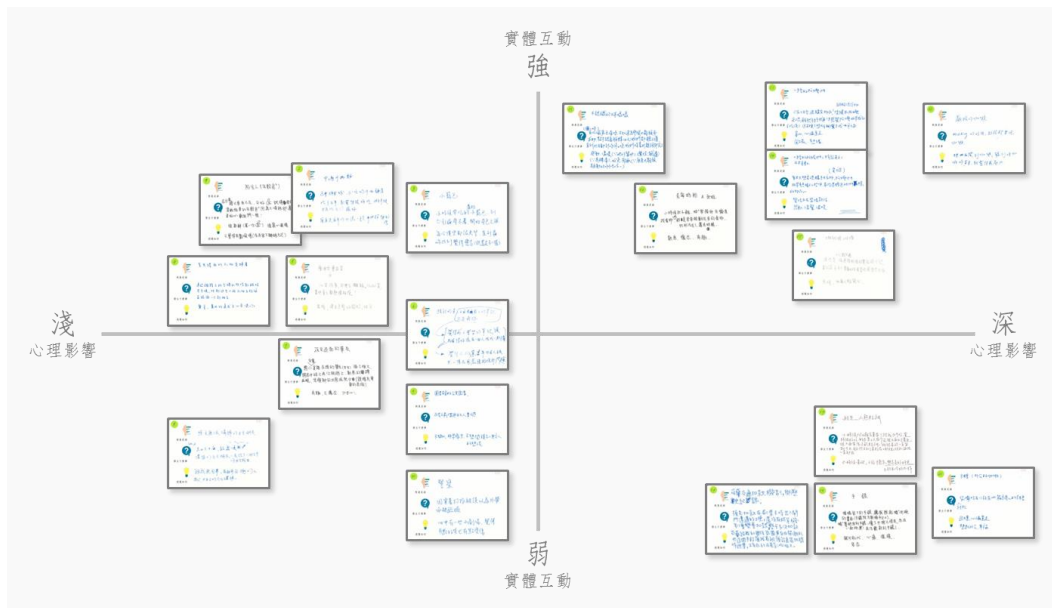


Figure 13 Card Sorting Result of Group 2

During the process of card sorting, it is observed that subject factors such as personal value and impact are relevant to intensity classification. The exchange of thoughts between groups will also have an impact on intensity classification. The card sorting outcome could demonstrate points as below:

- The intensity in the Indi-Experience is distinguishable.
- Indi-Experience could be reviewed by sorting and layering.
- Using multi-dimensional classification method could reflect the intensity classification more accurately.

#### 4.2 Intensity Factors of Experience

The multi-dimensional structure that is related to intensity factors is built step by step using the coding method, which could reconstruct the properties and dimensions through conceptualise phenomenon. The study extracts the relationship between subject and object in activity (event) and processes the analysis of each concept through physical and mental activity dimensions.

Table 2 Table of C-P-D Intensity Factors

Category	Sub-Category	Properties	Dimensions		
A	Physical Activity	A-1 Physical Mediation	A-1-1 Material Object	With	Without
		A-2 Duration	A-2-1 Duration	Extended	Brief
		A-3 Direction	A-3-1 Directionality	Two-way	Single
			A-3-2 Initial Direction	Initiative	Passive
A-4 Condition	A-4-1 Distribution	Normal Event	Random Event		
	A-4-2 Reproducibility	Reproducible	Irreproducible		
B	Mental Activity	B-1 Perceived Control	B-1-1 Control	Can Control	Cannot Control
		B-2 Intention	B-2-1 Intention	Specific Intention	Without Intention
		B-3 Emotional Connection	B-3-1 Native Connection	Strong	Weak
		B-5 Engagement	B-5-1 Engagement	High	Low
		B-6 Emotion	B-6-1 Pleasantness	Pleasant	Unpleasant
			B-6-3 Emotional Arousal	Arousing	Sleeping
			B-6-4 Turning Point	With	Without
B-7 Reference	B-7-1 Related Experience	Present	Absent		

### 4.3 Four types of memorable Indi-Experience

All cases discovered in this research should be considered as relatively deep or memorable Indi-Experiences based on the criteria of the workshop. Before discussing the deep Indi-Experience, this study will first focus on discussing the feature of the memorable Indi-Experiences. According to cluster analysis and the rating scale of C-P-D table of intensity factors, deep Indi-Experience cases are categorised into four types (See Figure 14) and are described below.

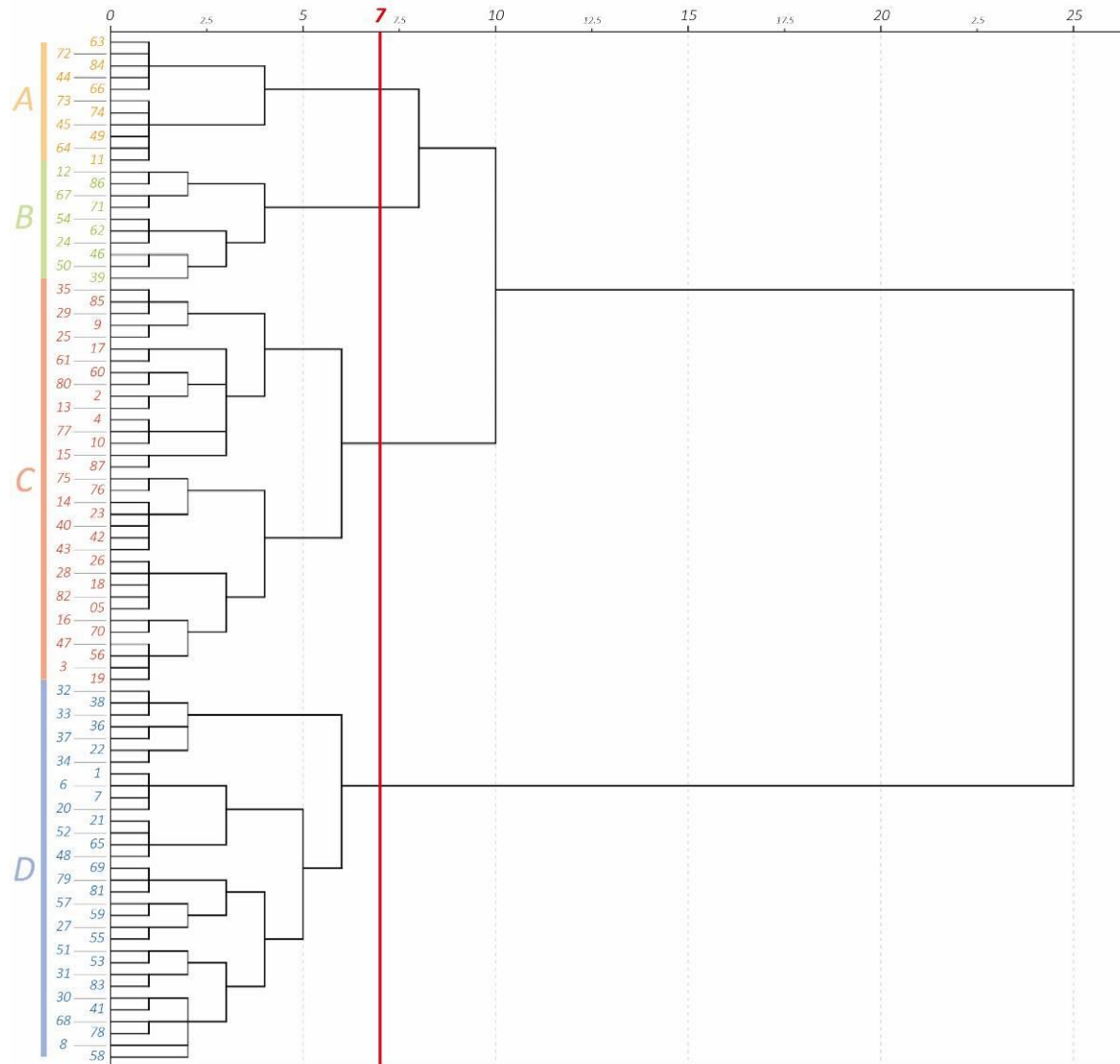


Figure 14 Clustering Tree of Indi-Experience based on Intensity Factors

Based on the cluster analysis of Indi-Experience samples and an overview of the content of the samples, four groups are named and defined, which are disintegrated (A), sensational (B), tangible (C), and unmanageable (D). Cases of four groups and the intensity factors are plotted in the graph below (Figure 15).

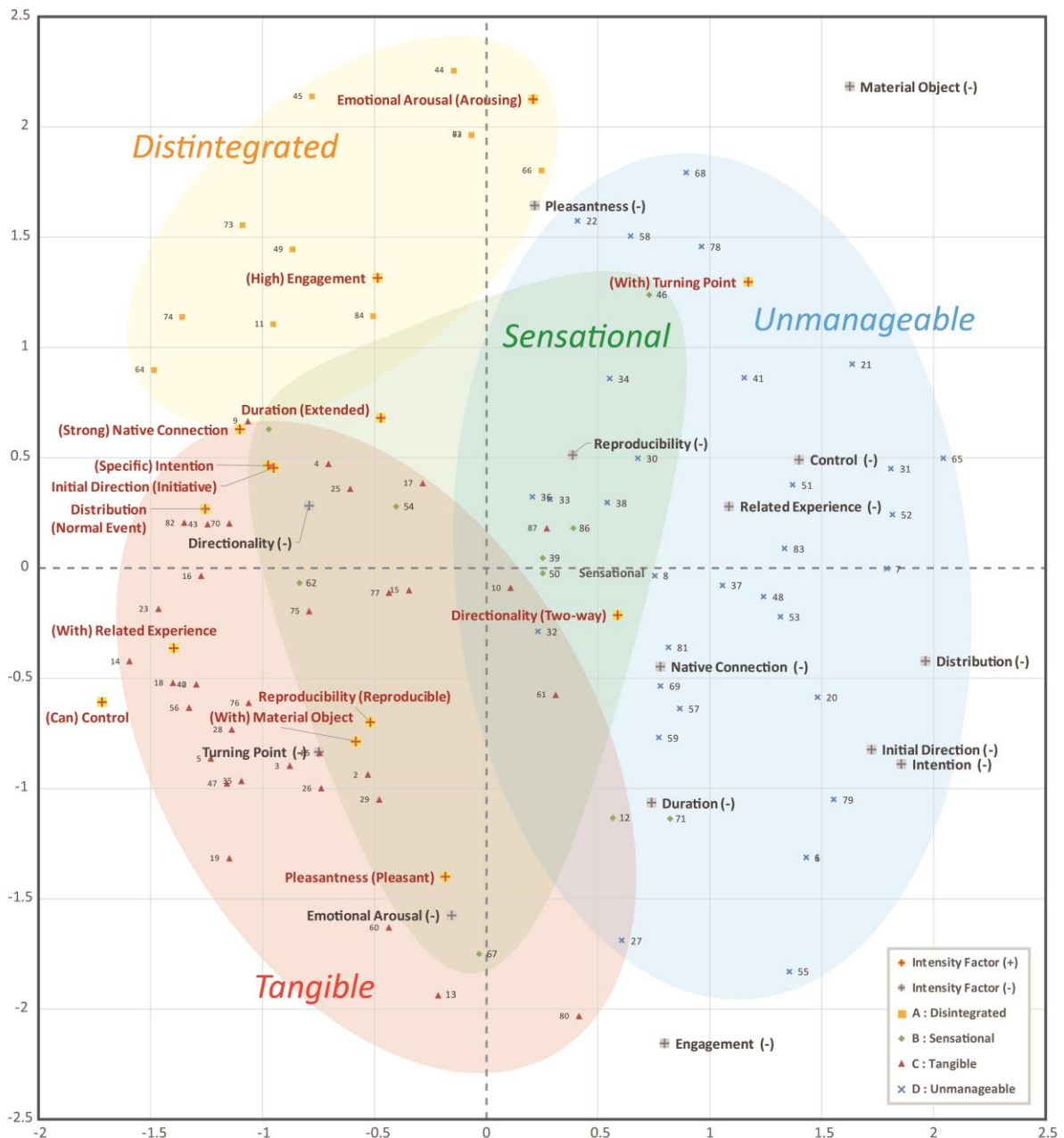


Figure 15 Four Types of Indi-Experiences

- A : Disintegrated

This type of Indi-Experience often begins with an objective-oriented behaviour and often endure an extended period. However, the resulted is ended with strong negative emotion.

The strong connection usually exists between object and subject such as an ex-boyfriend, important client, relatives, familiar location, blog posts written by the participant, etc., as observed in the samples. The type of activity usually lasts for an extended period, and the emotion invoked is usually negative and stimulating, for instance, intense emotional connection to the scene that prompts the sentiment, thoughts of passing the time and changed things, complaints of “Why does this always happen to me?”, frustration, self-doubt, and shameful feelings.

- B : Sensational

“Sensational” type of context has a rich emotional connection, but the actual content could not be recalled precisely. This type of Indi-Experience usually starts from a memory triggered by the senses and resulted in heartwarming feelings subsequently. This type of deep Indi-Experience usually happened years ago and required a series of activities in the background to awake the memory, yet an individual has no control of the content in present days. The memory is often recalled through a strong connection to senses, for instance, the connection between the smell of coffee and pressure, the connection between the taste of soup dumplings and homesickness, and mysterious plant smell prompts the memory of riding a bicycle with father, etc.

- C : Tangible

A tangible and physical medium that could be controlled must be featured in the event or activity of the “tangible” group. The event itself should usually happen and does not evoke any emotional responses.

The correlation between these types of events is low. However, a tangible and physical medium or object must be present in the event, such as furniture as an object while assembling it or physical gifts in a gift exchange event.

- D : Unmanageable

In “Unmanageable” type of experience, subject and object have a less emotional connection and have less relevant experience in between. Thus, this type of event is random, unreproducible, and uncontrollable.

The object in the type of experience usually has traits of uncontrollable and weak emotional connection. For example, stranger, online acquaintance, someone being mistaken for, etc., are usually the object. It is often the first time that the subject has such experience as it happens randomly. The type of experiences includes receiving an unexpected gift, system error occurring abruptly, or getting injured accidentally.

The Indi-Experience cases of “sensational” memory are projected in between the other three axes; nonetheless, these experiences are still being clustered into one group. It could be seen as between intervention of senses and deep Indi-Experience; there should be rooms of discussion in the future.

#### **4.4 Deep Individual Experience**

After the analysis of the memorable Indi-Experience, this session will discuss in detail about the deep Indi-Experience which been identified after the four workshops by the code team. Cluster analysis is conducted for the deep Indi-Experience. The factors that compose deep Indi-Experience will be reviewed and defined.

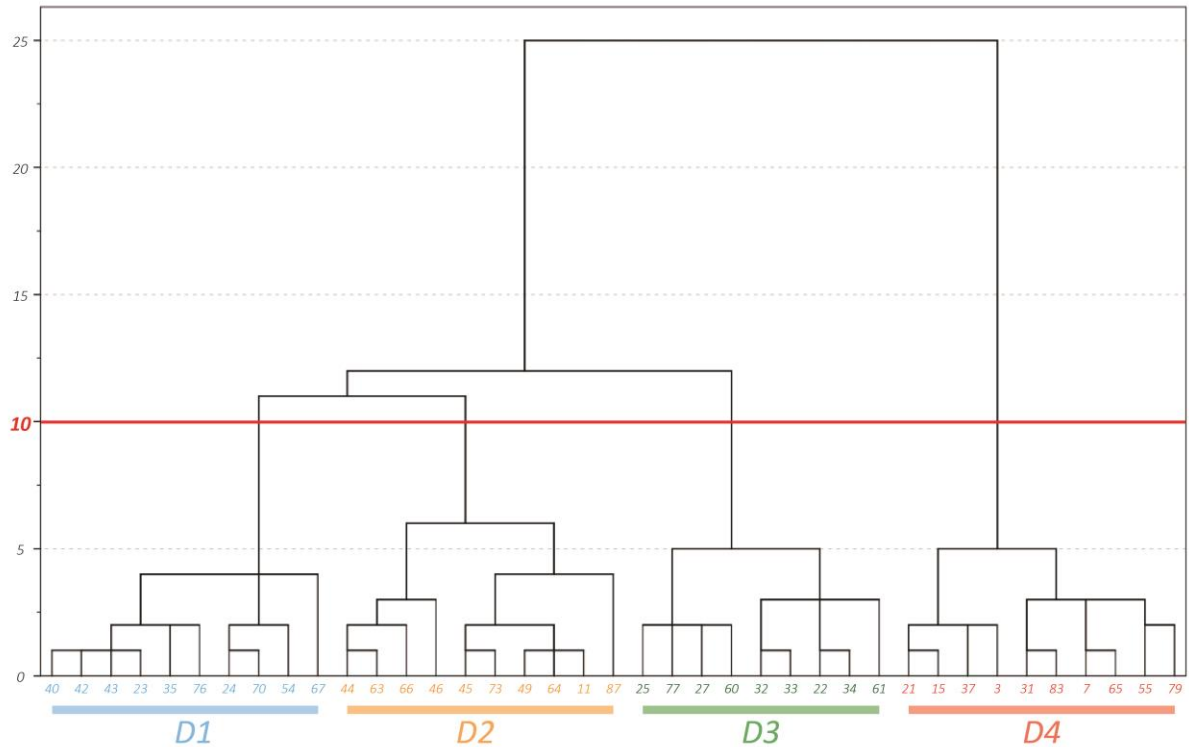


Figure 16 Dendrogram of Deep Experience

Four clusters of deep Indi-Experiences are founded using Ward’s cluster analysis to group the cases. Based on the traits they are named as “D1: Good Old Times”, “D2: Powerless”, “D3: Stranger’s Reciprocity”, and “D4: Sudden Upbeat”. Analyses of the four groups are provided below.

- D1 : Good Old Times  
 The subject invokes pleasant memories surrounded by an object which were gone for good. This type of Indi-Experience is firmly connected to a meaningful object; for example, like a toy from childhood, sugar can of a grandfather who passed away...etc. Because it is a past that could not be reproduced, the Indi-Experience is a process of reconstructing a period of the past which linked to a specific object.
- D2 : Powerless  
 The subject proactively invokes memories that are unpleasant and unreproducible. This type of Indi-Experience samples is almost entirely dedicated to the portrayal of “unreproducible memories” – Memory of taste evokes sickness of hometown, life scene with the former partner, amazing experiences shared by a group. Because it is a past that could not be rewind, the experience is a process of reconstructing the memory. The negative Indi-Experience triggered by the type of experience has different levels of significance, including hometown sickness, thoughts of passing the time and changed things, the sadness of unable to reproduce beautiful memory, and the loss results from missing the best times of life.
- D3 : Empathy-joy  
 The subject purposely reaches out to a stranger and in turn, have a pleasant experience.

This type of deep Indi-Experience focuses on the concept of “exchange” – the subject proactively interacts with an unfamiliar object and receives a genuine positive emotional feedback. The traits of this type are “not previous emotionally connected” and “bidirectional”. Sample descriptions include: Stranger promises hitchhiking request without reservation, retrieving a package from a neighbour who has never met before, and gift exchange with someone who is abroad and yet to meet.

- D4 : Sudden Upbeat

Pleasant mood as a result of receiving an unexpected message.

This type of deep Indi-Experience focuses on “one-way recipient of information” and “unexpected emotional turn” of two objects that have no emotions attached previously. Some sample descriptions include unforeseen greetings from the bus driver results in a good mood for the rest of the day, an unexpected passionate treat from a stranger, and impacts as a result of memento from an unknown elder.

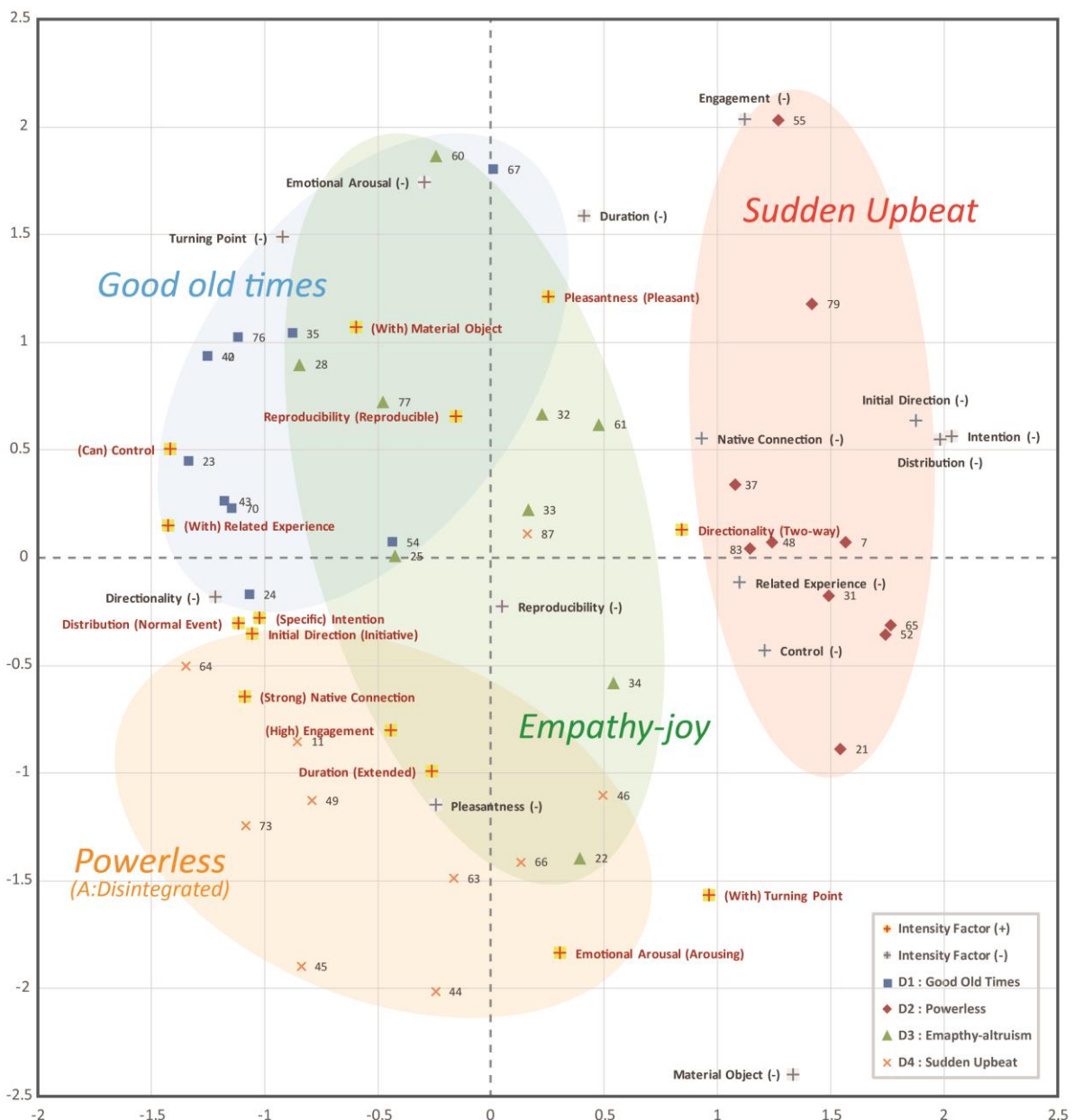


Figure 17 Four Types of Deep Indi-Experiences



## 5 Conclusion

The study finds that the intensity of experience has multi-dimensional properties and multi-factorial variables and using man as the subject to judge the intensity would inevitably be unable to prevent the differences between interpretation and review from happening. Also, the study ensures there is an objective assessment standard to classify experiences. After using coding to reconstruct interview data, a table of C-P-D Intensity Factors is generated. The properties and dimensions of the sub-categories could be queried using the table (Table 2), and these attributes are the factors that affect the intensity level proposed by this study.

After intensity factors are being labelled and categorised, the study uses cluster analysis and Quantification Method Type III to review samples of experiences in all and by groups. The analysis result shows that memorable Indi-Experiences could be grouped into four categories – disintegrated, sensational, tangible, and unmanageable. (See Table 3)

Table 3 Four types of Indi-Experience

Type	Feature
<b>A Disintegrated</b>	Subjects in this group are always highly involved in the activity with the specific intention for an extended period. The outcome usually arouses strong negative emotion, which results in mental breakdown.
<b>B Sensational</b>	Subjects have a robust native connection with events which contain strong sensory cue for the subject, such as unique smell, weird taste, etc. The interaction always starts with external stimuli.
<b>C Tangible</b>	Subjects need a tangible or physical object as the cue for evoking the impression of events.
<b>D Unmanageable</b>	Subjects usually have no related experience to the events. Experiences in this group are uncontrollable and cannot be reproduced.

Compare the cases in the cluster of deep Indi-Experiences; the results demonstrate that deep Indi-Experiences have four patterns, which are *Good Old Times*, *Powerless*, *Stranger's Reciprocity*, and *Sudden Upbeat*. (see Table 4)

Table 4 Four types of Deep Indi-Experience

Type	Feature
<b>D1 Good Old Times</b>	Pleasant memories surrounded by the subject's physical objects which were gone for good.
<b>D2 Powerless</b>	Subjects feel slightly unpleasant and have no power or opportunity to change the past.
<b>D3 Empathy-joy</b>	Sense of pleasure is based on the subject's responses given by strangers.
<b>D4 Sudden Upbeat</b>	Subjects unexpectedly experience pleasantness through a sudden message delivered by strangers.

After comparing the eight categories of memorable and deep Indi-Experiences, the study finds that the group Powerless (D2) is well overlapped with the group Disintegrated (A). The unpleasant (negative emotion) situation which cannot be flipped could be seen as a way that forms one's deep experiences.

Take a closer look at four groups of deep Indi-Experience; two main patterns could be stretched out. Firstly, D1 (Good Old Times) and D2 (Powerless) can be seen as a similar situation. Meaningful objects or unpleasant situations which raise an unchangeable or unreproduced fact could seem like a pattern that forms one's deep experience. Secondly, D3

(Empathy-joy) and D4 (Sudden Upbeat) shows that unexpected experiences lead to positive emotions could be seen as a pattern that also forms one's deep experience.

## 6 References

- Ariel, Y., & Avidar, R. (2015). Information, interactivity, and social media. *Atlantic Journal of Communication*, 23(1), 19-30.
- Chien-Ta Huang & Rung-Huei Liang. (2009). Designing Ambient Interaction for Social Ritual. *The 14th CID Annual Design Conference*, Taichung, May 16-17, 2009.
- Hasan, H., & Kazlauskas, A. (2014). Activity theory: Who is doing what, why and how.
- Hsu, C. S. (2016). Virtual possession attachment: the emotional relationship between individuals and their virtual possessions. A thesis of the Department of Industrial Design, National Cheng Kung University, 1-139.
- Jhang-Syong You, Pei-Hua Huang, and Yan-Ru Chen. (2009). 使用者導向之互動設計研究. *工業設計* (121), 189-194.
- Kelly, J. R. (2019). *Freedom to be: A new sociology of leisure*. Routledge.
- Pine, B. J., & Gilmore, J. H. (2011). *The experience economy*. Harvard Business Press.
- Rafaelli, S., & Ariel, Y. (2007). Assessing interactivity in computer-mediated. *Oxford handbook of Internet psychology*, 71-88.
- Schmitt, B. (1999). Experiential marketing. *Journal of marketing management*, 15(1-3), 53-67.
- Shedroff, N. (1999). Information interaction design: A unified field theory of design. *Information design*, 267-292.

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# Appendix A: The score of each intensity factor

Category	1-1	1-2	1-3		1-4		2-1	2-2	2-3	2-5	2-6			2-7
	Physical Mediations	Timing	Direction		Coddion		Control capability	Goal	Emotional Involvement	Attention	Emotion			Reference
Properties	1-1-1	1-2-1	1-3-1	1-3-2	1-4-1	1-4-2	2-1-1	2-2-1	2-3-1	2-5-1	2-6-1	2-6-3	2-6-4	2-7-1
Dimensions	(With)	(Extended)	(Two-way)	(Initiative)	(Normal Event)	(Reproducible)	(Can)	(Specific)	(Strong)	(High)	(Pleasant)	(Arousing)	(With)	(With)
1	1	0	0	0	0	0	0	0	0	0	1	0	1	0
2	1	1	1	0	1	1	1	1	0	0	1	1	0	1
3	1	1	0	1	1	1	1	1	0	0	1	0	1	1
4	1	0	0	1	1	1	1	1	0	1	0	1	0	0
5	1	0	1	1	1	1	1	1	1	1	1	0	0	1
6	1	0	0	0	0	0	0	0	0	0	1	0	1	0
7	0	0	0	0	0	0	0	0	0	0	1	1	1	0
8	0	0	0	1	0	0	0	1	0	0	0	0	0	0
9	1	1	0	1	1	1	1	1	1	1	1	1	0	0
10	1	0	1	1	1	1	0	1	0	0	0	1	0	0
11	1	1	0	1	1	1	1	1	0	1	0	1	1	1
12	0	1	1	0	1	1	0	0	0	0	1	0	0	1
13	1	0	1	0	0	1	1	1	1	0	1	0	0	1
14	1	1	0	1	1	1	1	1	1	1	1	0	0	1
15	1	1	0	1	1	1	1	0	1	0	1	1	1	0
16	1	1	0	1	1	1	1	1	0	1	0	0	0	1
17	1	1	0	0	1	1	1	1	0	1	1	1	1	0
18	1	1	1	1	1	1	1	1	1	1	1	0	0	1
19	1	1	0	1	1	1	1	1	0	0	1	0	0	1
20	1	0	0	0	0	0	0	0	0	0	1	1	1	0
21	0	1	1	0	0	0	0	0	0	1	1	1	1	0
22	0	1	1	1	1	1	0	1	0	1	1	1	1	0
23	1	1	0	1	1	1	1	1	1	1	1	0	0	1
24	1	1	0	1	1	0	0	1	1	1	0	0	0	1
25	1	1	1	1	1	1	1	1	0	1	1	1	0	0
26	1	1	1	1	1	1	1	0	0	1	1	0	0	1
27	1	0	1	0	0	0	0	1	0	0	1	0	0	1
28	1	1	1	1	1	1	1	1	0	1	1	0	0	1
29	1	1	1	1	1	0	1	1	0	0	1	0	0	0
30	1	0	1	0	0	1	0	1	0	1	0	1	1	1
31	0	0	1	0	0	0	0	0	0	1	0	0	1	0
32	1	1	1	1	0	0	0	1	0	1	1	0	0	0
33	1	1	1	1	0	0	0	1	0	1	0	0	0	0
34	1	1	1	1	0	0	0	1	0	1	1	1	1	0
35	1	1	1	1	1	0	1	1	1	0	1	0	0	1
36	1	1	1	0	1	0	0	1	0	1	1	1	0	0
37	1	1	1	0	0	0	0	0	0	1	1	1	0	0
38	0	1	1	1	0	0	0	1	0	1	1	0	0	0
39	1	1	0	0	1	1	0	0	1	0	0	1	0	0
40	1	0	0	1	1	0	1	1	1	1	1	0	0	1
41	1	0	1	0	0	0	0	1	0	1	0	1	1	0
42	1	0	0	1	1	0	1	1	1	1	1	0	0	1
43	1	0	0	1	1	0	1	1	1	1	1	1	0	1
44	0	1	1	1	1	0	0	1	1	1	0	1	1	1
45	0	1	0	1	1	0	1	1	1	1	0	1	1	1
46	0	1	0	0	1	0	0	0	1	1	0	0	1	0
47	1	0	0	1	1	1	1	1	0	1	1	0	0	1
48	1	1	1	0	0	0	0	0	1	0	1	1	1	0
49	1	1	0	1	1	1	1	1	1	1	0	1	1	0
50	1	1	0	0	0	0	0	0	1	1	0	0	0	1
51	0	1	1	0	0	0	0	0	0	1	0	0	0	0
52	0	1	1	0	0	0	0	0	0	0	1	1	1	0
53	0	1	1	0	0	0	0	0	0	1	1	0	0	0
54	1	1	1	0	1	0	0	1	1	1	0	0	0	1
55	1	0	1	0	0	0	0	0	0	0	1	0	0	0
56	1	1	0	1	1	1	1	1	0	1	1	0	0	1
57	1	1	1	1	0	0	0	0	0	0	0	0	0	0
58	0	1	0	1	0	1	0	0	0	1	0	1	1	1
59	1	1	0	1	0	0	0	0	1	0	0	0	0	0
60	1	0	1	1	1	1	1	1	0	0	1	0	0	0
61	1	1	1	0	0	1	1	1	1	0	1	0	1	0
62	1	1	1	1	1	0	0	1	1	1	1	0	0	1
63	0	1	1	1	1	0	0	1	1	1	0	1	0	0
64	1	1	0	1	1	1	1	1	1	1	0	1	0	1
65	0	0	1	0	0	0	0	0	0	0	0	1	1	0
66	0	0	1	1	1	1	0	1	1	1	0	1	1	0
67	1	0	0	0	1	1	0	0	1	0	1	0	0	1
68	0	0	0	0	0	0	0	1	0	1	0	1	1	0
69	1	0	1	1	0	1	0	1	0	0	0	0	1	0
70	1	1	0	1	1	1	1	1	0	1	0	0	0	1
71	0	0	1	0	1	1	0	0	1	0	1	0	0	0
72	0	1	1	1	1	0	0	1	1	1	0	1	0	0
73	1	1	0	1	1	0	1	1	1	1	0	1	1	1
74	1	1	0	1	1	0	1	1	1	1	0	1	0	1
75	0	1	0	0	1	1	1	1	1	0	0	0	1	1
76	1	0	0	1	1	0	1	1	1	0	0	0	0	1
77	1	0	1	1	1	0	1	1	0	1	0	0	0	0
78	0	0	1	1	0	1	0	1	0	1	0	1	1	0
79	1	0	1	0	0	1	0	0	0	0	0	0	1	0
80	1	0	1	0	0	1	1	0	0	0	1	0	0	0
81	1	1	0	1	0	1	0	0	0	0	0	0	1	0
82	1	1	1	1	1	1	1	1	1	1	1	1	0	1
83	0	0	1	0	0	1	0	0	0	1	0	0	1	1
84	1	1	1	1	1	1	0	1	1	1	0	1	0	0
85	1	1	1	1	1	0	1	1	1	0	1	0	0	0
86	0	1	1	0	1	1	0	0	1	1	1	0	1	1
87	1	0	0	1	1	0	1	0	0	0	0	1	1	0