



The Effects of Consumer-Endorser Congruence and Para-social Interaction on Online Celebrity Endorsement

刘, 博毅

(Degree)

博士 (商学)

(Date of Degree)

2023-03-25

(Date of Publication)

2025-03-25

(Resource Type)

doctoral thesis

(Report Number)

甲第8580号

(URL)

<https://hdl.handle.net/20.500.14094/0100482328>

※ 当コンテンツは神戸大学の学術成果です。無断複製・不正使用等を禁じます。著作権法で認められている範囲内で、適切にご利用ください。



Doctoral Dissertation

The Effects of Consumer-Endorser Congruence and Para-social Interaction on Online Celebrity Endorsement

消費者とエンドーサーの一致とパラソーシャルな
インタラクションがオンライン有名人の
エンドースメントに与える影響

January 19, 2023

Graduate School of Business Administration

Chieko Minami Laboratory

Business Administration

172B121B

Liu Boyi

Abstract

Due to the widespread use of interactive social media in daily life, online celebrity endorsement has emerged as the main mode of online advertising communication. This dissertation investigated the similarities (Study 1) and differences (Study 2) between online and traditional celebrity endorsements as information sources by using social influence theory and the celebrity endorsement model. Then, we looked into the effect of the connection (congruence and para-social interaction) between consumers and endorsers on the online celebrity endorsement effect (Study 3). Finally, this dissertation delineated the factors that can influence the online celebrity endorsement effect. This dissertation contained three studies. Each study had its own data set, which was collected by distributing questionnaire sets. To put the model to the test, covariance structural equation modeling was used.

The main findings can be summarized as follows: 1) As the information source, the “attractiveness”, “expertise”, and “trustworthiness” of online celebrity endorsers have a positive influence on consumers’ attitudes toward the endorsed products and purchase intentions. In addition, the influence of source attractiveness is stronger than the influence of source credibility. 2) The consumer-endorser congruence enhances the endorsement effect. As an information source, endorsers can not only directly influence consumers’ attitudes, but they can also positively influence the endorsement effect via consumer-endorser congruence. 3) The para-social interaction is the moderator variable in the online celebrity endorsement effect. In high-level PSI, the source model and congruence can have a greater influence on consumers’ attitudes toward endorsed products than in low-level PSI.

The contribution of this dissertation was to enrich the content of the research on the online celebrity endorsement effect and provide a certain reference for the advertising strategy by clarifying the effectiveness of connection (congruence and PSI) between consumer and endorser on online celebrity endorsement.

Keywords: Online celebrity endorsement, Para-social Interaction, Consumer-endorser Congruence, Traditional celebrity endorsement, Attitude, Purchase Intention

Acknowledgement

I am always grateful that I can be a part of Kobe University and a member of the Minami Seminar. Whenever someone mentions my years at Kobe University, the first things that come to mind are the cherry blossom trees at Kobe's main gate in April, the ginkgo leaves in front of the main gate in October, and the Harry Potter-style library for Social Sciences where I always got lost. If my student life were a chapter in a book, I would like to conclude it by expressing my appreciation to every professor at Kobe University, every classmate I have met, and these golden days.

First of all, I would like to express my gratitude to my supervisor, Professor Chieko Minami, who is renowned for her outstanding academic accomplishments and charming personality. When I learned that I might be one of the students in Professor Minami's seminar and study with her, I felt elated and honored. To me, Professor Minami is both my supervisor and my family. She always points me in the right direction when I'm lost, gives me strength when I'm exhausted, and provides me with full encouragement and support when I'm nervous and confused about my dissertation. I am a person prone to self-doubt. Throughout the process of writing my dissertation, I frequently felt very uncertain and powerless and even considered giving up. However, each time I discussed the paper's issue with Professor Minami, I was bolstered, and our conversations helped me rediscover confidence in myself and the motivation to carry on. Professor Minami is my spiritual support; I am grateful to her for allowing me the opportunity to express myself and for her intellectual and emotional guidance and support.

Secondly, I would like to thank Professor Nobuhiro Sanko and Professor Fumikazu Morimura. Both of the two professors take time out of their hectic schedules to supervise me and give me lots of suggestions. I would like to thank them for their insightful comments, which have contributed to the continual improvement of my thesis. In addition, I'd like to thank every student in Minami's seminar who actively debated and explored with me after each presentation I gave; they helped me continuously develop the paper's substance throughout the communication process. When I faced issues in the study process, they were consistently supportive.

Finally, I would like to thank my husband, Mr. Wang Yinan, and my family for their complete recognition and respect since I decided to pursue a Ph.D. Even if the epidemic separated us for a considerable amount of time, their support and company did not wane. When I'm frustrated, my husband offers me a lot of comfort and support. Additionally, I appreciate my family's patience and camaraderie.

In the Graduate School of Business Management of Kobe University, I have learned knowledge, redefined myself, accessed my potential, made precious connections, and felt the college's strong humane care. I will try to give back to society in the future with the same thankful attitude.

Table of Contents

1. Introduction.....	1
1.1 Research Background	1
1.2 Theoretical Background.....	1
1.3 Research Gaps	2
1.4 Research Questions & Objective	3
1.5 Contributions & Implications	4
1.6 The Structure of The Dissertation.....	5
2. Celebrity Endorsement.....	6
2.1 Concept of Celebrity Endorsement.....	6
2.2 The Effectiveness of Celebrity Endorsement	6
2.3 Celebrity Endorser as An Information Source in Endorsement Effect.....	7
2.3.1 Source Credibility Model	8
Trustworthiness.....	8
Expertise	9
2.3.2 Source Attractiveness Model	11
2.4 Theoretical Background.....	12
2.5 Summary	13
3. Online Celebrity Endorsement.....	14
3.1 Background of Online Celebrity.....	14
3.2 Online Celebrity Endorsement VS. Traditional Celebrity Endorsement.....	15
3.2.1 Similarity between Online Celebrity Endorsers & Traditional Celebrity Endorsers	15
3.2.2 Differences between Online Celebrity Endorsement & Traditional Celebrity Endorsement	16
3.2.3 Summary.....	18
3.3 Effectiveness of Online Celebrity Endorsement.....	18
3.3.1 Effectiveness of Online Celebrity Endorsement on Consumers.....	18
3.3.2 Effectiveness of Online Celebrity Endorsement on Brands	20
3.4 Summary	21
4. Para-social Interaction Theory	22
4.1 Concept of Para-social Interaction.....	22
4.2 Effectiveness of Para-social Interaction	23
4.2.1 Para-social Interaction Acting as Dependent Variable.....	23
4.2.2 Para-social Interaction Acting as Independent Variable	24
4.3 Summary	25
5. Congruency Theory	26
5.1 Self-Congruence	26
5.2 Endorser-Brand Congruence.....	26
5.3 Consumer-Endorser Congruence.....	27
5.4 Theoretical Background.....	28

5.5 Summary	29
6. Research Design.....	30
6.1 Definition of Concepts.....	30
6.2 Research Content & Motivation	30
6.3 Covariance Structure Equation Model.....	32
6.4 Data Analysis Explanation.....	33
7. Study 1. The Source Model Effectiveness of Online Celebrity Endorsement on Consumer ..	35
7.1 Introduction.....	35
7.2 Hypothesis Development.....	36
7.3 Research Design	38
7.4 Measurements	39
7.5 Data Collection	41
7.6 Data Analysis	41
7.7 Hypothesis Test.....	44
7.7.1 Direct Effect.....	44
7.7.2 Mediation Effect	45
7.8 Discussion.....	46
8. Study 2. The Influence of Para-social Interaction on Celebrity Endorsement Effectiveness	47
8.1 Introduction.....	47
8.2 Hypothesis Development.....	49
8.3 Research Design	50
8.4 Measurements	52
8.5 Data Collection	54
8.6 Data Analysis	55
8.7 Hypothesis Test.....	56
8.7.1 Direct Effect.....	56
8.7.2 Mediation Effect	57
8.7.3 Moderation Effect.....	58
Online PSI.....	64
Traditional PSI.....	67
8.8 Discussion.....	71
9. Study 3. The Influence of Congruence on Celebrity Endorsement Effectiveness.....	72
9.1 Introduction.....	72
9.2 Hypothesis Development.....	73
9.3 Research Design	75
9.4 Measurements	76
9.5 Data Collection	77
9.6 Data Analysis	78
9.7 Hypothesis Test.....	80
9.7.1 Direct Effect.....	80
9.7.2 Mediation Effect	81

9.7.3 Moderation Effect.....	83
9. 8 Discussion.....	89
10. Conclusion	90
10.1 Summary.....	90
10.2 Theoretical Development.....	91
10.3 Marketing Implications.....	92
10.4 Theoretical Contribution & Originality	93
10.5 Research Limitations	94
10.6 Conclusions.....	95
Reference	97
Appendix 1. List of Tables.....	116
Appendix 2. List of Figures	118
Appendix 3. Questionnaire Distribution Platform –Wenjuanxing.....	119
Appendix 4: Data Analysis Platform - AMOS Software Version 18	121

1. Introduction

1.1 Research Background

Nowadays, in the field of advertising endorsements, companies seem to put more effort into making sure that endorsers and consumers are a good fit and that the interaction between them is strong enough than how well the products and endorsers match up.

The advent of information fragmentation has transformed social media platforms into an important way for people to access information. As a result, before purchasing a product, consumers will refer to or be more inclined to take the suggestions of online celebrities they follow or like. Consumers will even consume directly via links supplied by online celebrities on various social media platforms while interacting with them. Thus, people who are famous for physical attractiveness or a widely publicized event on interactive social media platforms, namely online celebrities, are gradually becoming the new type of endorser. YouTubers, Instagrammers, key opinion leaders, etc. can all be seen as online celebrities. Online celebrity endorsers are more willing to interact with potential consumers and followers on interactive social media platforms and distribute promotional content in various formats.

The new model of online celebrity endorsement has caught the attention of marketers. It seems that the advantages of using traditional celebrities who are well known to the public for their outstanding works or achievements in a certain field, such as actors or sports stars, as information transmission media to promote products or brands on traditional mass media are no longer obvious (Guruge, 2018). Marketers believe that in the context of the interactive social media platform, online celebrities' endorsements could have a better influence on consumers' attitudes towards products and purchase intentions. Data from the China Digital Marketing Trends Report showed that up to 63% of advertisements in 2020 used online celebrities for endorsements on social media advertising.

Obviously, the connection between consumers and online celebrity endorsers is stronger than that between consumers and traditional celebrity endorsers. Therefore, it's necessary to investigate whether congruency and para-social interaction between customers and endorsers are influential factors in the effectiveness of online celebrity endorsements.

1.2 Theoretical Background

The celebrity endorsement effect is a kind of advertising process. The effectiveness process of celebrity endorsement could be explained by using the social influence theory which is proposed by H. Kelman in 1961. Individuals' beliefs, attitudes, and behaviors can be changed by the influence of others. Researchers have generally agreed that attractiveness works through identification, while trustworthiness and expertise work through internalization (Petty & Brinol, 2008; Brinol & Petty, 2012).

As for the online celebrity endorsement, researchers demonstrate that the online environment makes celebrities and customers more intimate. According to Horton and Richard Wohl (1956), when a person forms a sense of closeness and identity with a celebrity through the media, they begin to form a para-social relationship (PSR) and para-social interaction (PSI). Based on the underpinning theory of social influence, scholars have concluded that online celebrity endorsement's success depends on customers' para-social interactions with celebrities on social media (Djafarova & Rushworth, 2017; Colliander & Dahlen, 2011; De Veirman et al., 2017). Researchers have also observed that consumers may analyze the overlap between celebrities' perceptions and their self-concepts through para-social interaction (Evans et al., 2017; Sokolova & Kefi, 2020). It can also be explained by the internalization process of social influence theory.

1.3 Research Gaps

Gap 1: The inclusive research subjects: The current research is limited to a certain type of online celebrity endorsement effectiveness (Park & Lin, 2020; Lu & Chen, 2021) or endorsers for specific types of products or brands (Argyris et al., 2021). However, these studies cannot illustrate the celebrity endorsements effectiveness of all types of online celebrity endorsers (Gap 1). Therefore, this paper should expand the range of types of Internet celebrity endorsement research.

Gap 2: Testing PSI directly: In order to test PSI, researchers used to evaluate consumers' perception and prediction of intention behaviors (Sokolova & Kefi, 2020; Xu et al., 2021). Other studies tried to investigate the effectiveness of PSR on consumers to illustrate the importance of PSI in celebrity endorsement, but these studies cannot directly explain how PSI affects endorsement. Thus, testing PSI directly should be done.

Gap 3: Different types and levels of PSI: Although previous research has shown that online celebrities with huge followings are more likable but less professional than traditional celebrities (Hautz et al., 2014; Müller et al., 2018). However, few comparison studies discuss the distinctions between traditional and online celebrity endorsement based on interactive social media platforms. Thus, we should conduct a study to compare traditional and online celebrity endorsements, taking the types (traditional one-way vs. online two-way) and levels (low vs. high) of PSI into account.

Gap 4: General version of consumer-endorser congruency: A growing number of studies have found that endorser-product congruence has effects on consumers (Schiappa et al., 2007; Hartmann & Goldhorn, 2011; Xu et al., 2021). Recent studies are more focused on different aspects of consumer-endorser congruence, also known as "homophily" (Kim & Kim, 2020; Sokolova & Kefi, 2020; Shan et al., 2020). Therefore, we should more comprehensively discuss the impact of the overall congruency between consumers and endorsers on the effect of online celebrity endorsement. And the relationship between consumer-endorser PSI and their Congruence in online celebrity endorsement also needs to be discussed.

1.4 Research Questions & Objective

In order to fill the gaps, the research objectives of this doctoral dissertation will be divided into two steps: To begin, we will examine how the differences between traditional and online celebrity endorsers influence the endorsement effect. Secondly, discuss how the connection (interaction and congruence) between the consumer and endorser works in the process of the online celebrity endorsement effect. Based on the research objectives and research questions, finally, the research questions can be shown as follows:

RQ1: What is the main difference between online celebrity endorsement and traditional celebrity endorsement?

RQ2: In the context of interactive social media platforms, how will online celebrity endorsement influence consumers' attitudes and purchase intentions?

The framework of the dissertation can be shown as follows (Figure 1). To solve the problems, three studies based on the framework are designed. In order to fill Gap 1, Study 1 is going to explore the influence of all types of online celebrities as information sources on consumers' attitudes and purchase intentions on the basis of the theoretical background of social influence theory. Study 2 will fill Gaps 2 and 3 by focusing on the specific characteristics of para-social interaction in online celebrity endorsement, with the goal of demonstrating that only online PSI can moderate the effects of the source model on the consumer's attitude. In order to fill Gap 4, Study 3 aims to observe the importance of consumer-endorser congruence in the effectiveness of online celebrity endorsement. The entire dissertation applied quantitative research methods. In each study, different surveys are designed to collect data. The survey is distributed on an online questionnaire distribution platform, Wenjuanxing (WJX) (Appendix 3). The maximum likelihood estimation method (MLE) is used for the data analysis in Covariance-SEM via AMOS Version 18 (Appendix 4).

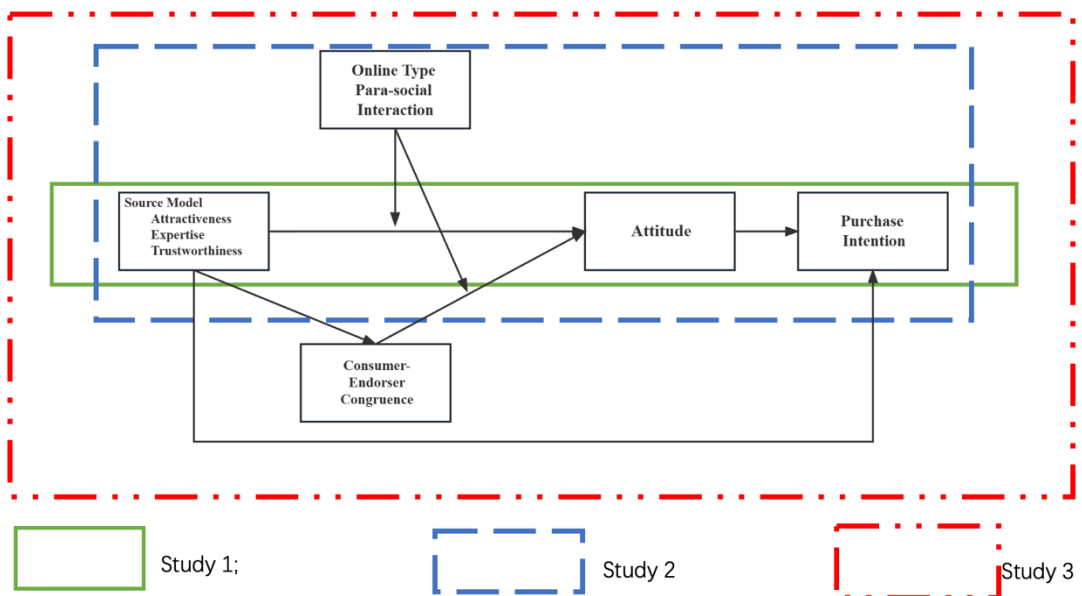


Figure 1. Framework of the dissertation

The celebrity endorsement theory and the social influence theory served as the theoretical foundation for developing the framework for all three studies. A progressive relationship exists among the three studies. In the field of marketing, we need to explore in the form of hierarchy and spiral, and the three studies should be related to each other, so as to ensure that the model is reliable and there are no other possibilities. If the basic model in Study 1 is wrong, we cannot add new factors for further exploration. Therefore, it is very necessary to explore Study 1 and Study 2 before studying Study 3.

Moreover, although Study 3 contains all the factors of Study 1 and Study 2, the research objects of each are different (Figure 3). Study 1 includes all types of online celebrity endorsers. Study 2 includes both online and traditional celebrities with endorsed smartphones, while Study 3 only focuses on online celebrity endorsers who can endorse smartphones.

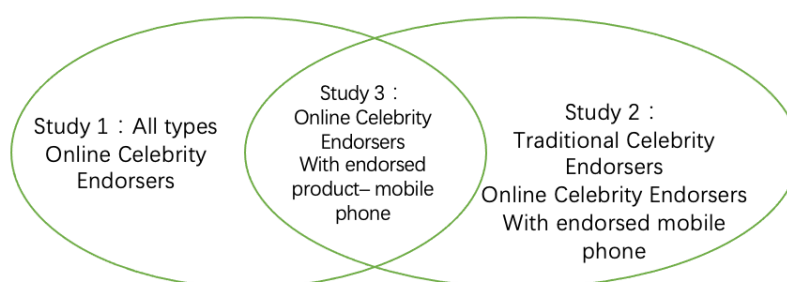


Figure 2. Research objects on three studies

1.5 Contributions & Implications

This dissertation employs social influence theory and quantitative research methods to examine how important factors affect customers' attitudes and intentions toward online celebrity endorsement. Several innovations and contributions have been made. Firstly, this dissertation examines the impact of the sources model on consumers without identifying any specific type of online celebrity endorsers. Furthermore, different types of PSI distinguish traditional and online celebrity endorsement and clarify the necessity of online type PSI for online celebrity endorsement. In addition to the differences in PSR, we also take into account the impact of the different social presence brought by online-type PSI on the effect of information sources on endorsement. Finally, based on the traditional celebrity endorsement framework, we create a new model of online celebrity endorsement that highlights the importance of PSI and congruence between consumers and endorsers in online celebrity endorsement effectiveness.

Online celebrity endorsers can help marketers find their target customers through this study. It can also employ online celebrities' social influence and characteristics as information sources to increase information publicity and indirectly optimize consumer relationships to increase product loyalty.

Advertising and information transmission are experiencing new challenges in the information explosion. Discussing how to efficiently provide important information to

target consumers is always worthwhile. Many scholars have studied internet celebrities as a modern commodity, but their role in advertising and information diffusion needs further study. Thus, online celebrity endorsements should be periodically researched.

1.6 The Structure of The Dissertation

The following Figure 3 shows the whole structure of this dissertation.

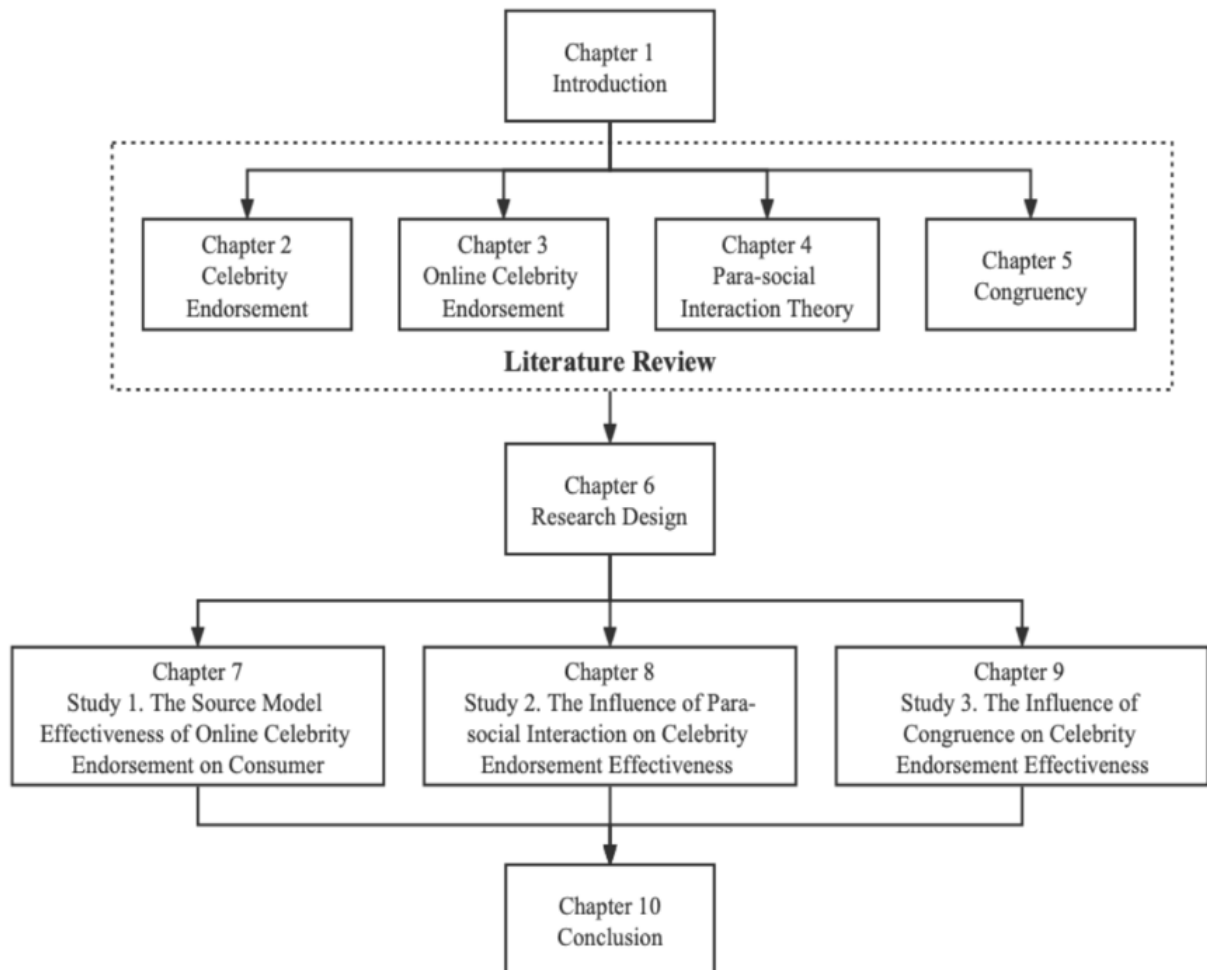


Figure 3. The Structure of The Dissertation

2. Celebrity Endorsement

2.1 Concept of Celebrity Endorsement

Scholars have come up with different ways to explain what celebrity endorsement is. In the narrow sense, a celebrity endorser usually involves those who are well-known to the public for their accomplishments in fields such as sports, entertainment, politics, broadcasting, and business (Friedman & Friedman, 1979). In a broad sense, McCracken (1989) argued that a celebrity endorser is an individual who utilizes their public notoriety to promote a product and appears in advertisements alongside the product. Depending on the type of endorsement or the purpose of the endorsement, researchers have defined celebrity endorsement in more detail (Table 1). In the advertising communication field, McGuire's (1985) definition of celebrity endorsement is widely accepted. He stated that in celebrity endorsement, an individual with public recognition uses such recognition to appear in advertising on behalf of a product.

Table 1. Definition of celebrity endorsement

Scholars (Year)	Definition of celebrity endorsement
Mowen and Brown (1981)	The person who has popularity and influence among people tries to attract consumers' attention and encourage buying behavior in the advertisement.
McGuire's (1985)	An individual with public recognition uses such recognition to appear in advertising on behalf of a product.
McCracken (1989); Friedman & Friedman (1979)	Celebrities take advantage of their high popularity to promote consumer products in advertisements.
Pringle & Binet (2005)	Advertisers use celebrity's reputation to promote the brand, and then connect the brand with celebrity's characteristics and values to promote the behavior of the brand.

Researchers have tried to divide celebrity endorsements in detail according to the approaches and types of endorsement. Kamen et al. (1975) identified four types of endorsements on the basis of the form in which the celebrity appears in the endorsement: testimonial, endorser, actor, and spokesman. McCracken (1989) classified endorsements into three categories on the basis of the way they are expressed: explicit endorsement ("I recommend this product"), implicit endorsement ("I use this product"), and co-present endorsement ("I merely appear with this product").

In this dissertation, the celebrities are not classified formally but are categorized into traditional celebrity endorsers and online celebrity endorsers depending on how the endorsers became famous.

2.2 The Effectiveness of Celebrity Endorsement

Celebrity endorsement is a special marketing tool for advertising to disseminate information. Marketers can use celebrity endorsement as a promotional strategy to

launch new products, reposition brands, or strengthen brand images (Erdogan et al., 2001; Ohanian, 1991). The endorser's characteristics can also be used to increase consumers' trust in the product, leading to increased purchase intentions. Celebrity endorsements make advertising more effective, trustworthy, and persuasive (Freiden, 1984; Till & Shimp, 1998). The positive effects of celebrity endorsements can be broadly divided into two categories.

The first one is the psychological effect of advertising. The endorsement effect mainly affects consumers' attitudes and purchase intentions (Harmon & Coney, 1982; Moore et al., 1986; Wu & Shaffer, 1987). Kamins (1990) stated that celebrity endorsers can make advertisements believable as well as enhance message recall by using advertising information. Researchers believe that celebrity endorsement enhances consumers' trust in information and then leads to a positive purchase intention for the brands (Stafford et al., 2003; Amos et al., 2008; Biswas et al., 2006; Fredman & Freidman, 1979; Kamins, 1990; Ohanian, 1990; Lafferty et al., 2002).

The second one is the brand communication effect. The purpose of celebrity endorsements is to add value to a brand, product, or service offering. The credibility of a celebrity endorser helps to improve brand image and adds value to brand equity through variables such as brand trust (Dwivedi et al., 2016; Keller & Ringrose, 2015; Hovland et al., 1953). Celebrity endorsements can indirectly influence consumers' attitudes toward brands or products (Woodside & Davenport, 1974; Ajzen & Fishbein, 1975; Craig & McCann, 1978; Mitchell & Olson, 1981; Atkin & Block, 1983; Goldberg & Hartwick, 1990; Lafferty & Goldsmith, 1999; McGinnis & Ward, 1980), further increasing their loyalty as well as their purchase intention (Phua et al., 2018).

However, some of the research focused on the negative effects of celebrity endorsement. Bartz et al. (2013) studied the negative impact of scandals involving celebrity endorsers on corporate value. However, others stated that negative news about endorsers could also have a positive influence in some cases. For example, it could quickly spread relative information (Campbell & Warren, 2012; Saaksjarvi et al., 2016).

To be summarized, whether positive or negative endorsement effectiveness, celebrity endorsement could always accelerate the speed of influence and expand the scope of information transmission. Therefore, in this dissertation, we need to discuss more precisely what factors could only have a positive effect on consumers through celebrity endorsement in advertising communication.

2.3 Celebrity Endorser as An Information Source in Endorsement Effect

In previous research, scholars have mainly used the source effect (Hovland & Weiss, 1951; Mills & Harvey, 1972; Ross, 1973; Horai et al., 1974; Maddux & Rogers, 1980; Ohanian, 1991; Zhang, 2011), persuading effect (Lafferty & Goldsmith, 1999; Goldsmith et al., 2000; Moore et al., 1986), meaning transfer theory (Balog et al., 2008; Erz & Christensen, 2018; Sun et al., 2021; Kahle & Homer, 1985; Solomon et al., 1992;

Kamins & Gupta, 1994; Till & Busler, 2000; Ma et al., 2017), congruency theory or match-up hypothesis (Stone et al., 2003; Sun et al., 2021), elaboration likelihood model (ELM) (Patzer, 1983; Huang & Sarigollu, 2014; Petty et al., 1981) when exploring the influence of celebrity endorsement on brand and advertising effects. These studies have theoretically demonstrated that the effectiveness of celebrity endorsements is influenced by certain characteristics from different perspectives of semiotics, communication, and social psychology. As for consumers, they used to interpret and emotionally transform the advertising message after they receiving it. The effect of such an endorsement ultimately influences their attitudes and purchase intentions.

2.3.1 Source Credibility Model

In the source credibility model, credibility is described as having two aspects: expertise and trustworthiness (Hovland & Weiss, 1951; Hovland et al 1953; Roy & Sternthal, 1977; Sternthal et al., 1978; DeSarbo & Harshman, 1985; Ohanian, 1991). An endorser' s trustworthiness indicates the source' s objectivity, honesty, and sincerity (Ohanian, 1991; Erdogan, 1999). According to Robina Ohanian (1991), expertise refers to a source' s perceived ability to provide correct information, including knowledge, experience, and skills (Ohanian, 1991). The source credibility model mainly discusses the role of the information source in the process of attitude change and persuasion.

Carl Hovland and others developed the source credibility model (Hovland & Weiss, 1951; Hovland et al., 1953). They discovered that the credibility of an endorser has a significant impact on the persuasiveness of messages. The higher the source credibility is, the better the persuasive effect is. Aziz et al. (2013) also identified a positive association between celebrity credibility and a consumer' s attitudes toward advertisements, products, and brands and their purchasing intentions. Regardless of the credibility of the source of an advertisement' s content, it will have a direct impact on consumers' decision-making process. According to Harmon and Coney (1982), an information source with credibility is more important than a source with less credible communication.

Trustworthiness

Trustworthiness has been studied in diverse fields, including sociology, economics, and management. Ohanian's (1991) concept of trustworthiness in celebrity endorsements is frequently used in the field of endorsements. When consumers may use products directly, the trustworthiness of endorsement sources becomes more important. Ohanian (1991) argued that trustworthiness is determined by customers' perception that endorsers are characterized by honesty, integrity, and believability. Goldsmith and others concluded that consumers usually regard celebrities as trustworthy sources of information transmission for endorsement (Goldsmith et al., 2000) because they have a social obligation as persons with social influence. Therefore, they need to take responsibility for their output information.

Many researchers have explored the relationship between the trustworthiness of endorsers and consumers. Table 2 summarized previous studies using different theories to explain how trustworthiness in source model could influence on consumer. In

advertising, the trustworthiness of endorsers is frequently exploited to influence consumers' attitudes and purchase intentions through the persuading effect (Lafferty & Goldsmith, 1999; Erden & Swait, 2004). Research has proved that the higher the credibility of the source, the more positive the attitude toward its message. Craig and McCann (1978) further proved that high credibility results in more positive attitudinal changes and is more likely to lead to behavioral changes.

Other researchers have found that the credibility source model is frequently combined with the meaning transfer model and then affects consumers' purchase intention (Hovland & Weiss, 1951; Hovland et al., 1953). Celebrity endorsers who are trustworthy could be seen as a trustworthy information source and will make consumers trust the products or brands they endorse, which may later enhance consumers' purchase intention. Researchers have examined the trustworthiness of information sources on the basis of the degree of matching between products and endorsers. The better the degree of matching, the more consumers will value the endorsers' reputation, attractiveness, and products (Hovland et al., 1953; Moore et al., 1986; Goldsmith et al., 2000; Zhang, 2011).

Table 2. Different theory to explain the effectiveness of trustworthiness on

consumer				
Independent Variable	Theory	Effects	Dependent Variable	Reference
Trustworthiness	Persuasion Theory	positive	attitudes	Lafferty & Goldsmith, 1999; Hovland et al., 1953; McCann, 1978; Erden & Swait, 2004; Schouten et al., 2020; Sokolova & Perez, 2021
		positive	purchase intention (PI)	Lafferty & Goldsmith, 1999; Hovland et al., 1953; McCann, 1978; Erden & Swait, 2004
	Meaning Transfer Model	positive	PI	Hovland & Weiss, 1951; Hovland et al., 1953; Shrivastava et al., 2021; Lu & Chen, 2021
		positive	attitude	Hovland et al., 1953; Moore et al., 1986; Goldsmith et al., 2000; Zhang, 2011

Expertise

An additional factor in the source credibility model is expertise. Expertise reflects the knowledge, experience, or skill of the endorser. Therefore, the endorser's expertise stems from his or her experience, training, talent, and ability to provide information to others (Horai et al., 1974). Different scholars define expertise in various ways. There are primarily four dimensions in existing definitions: "competence," "qualification," "expertness," and "authoritativeness" (McCroskey, 1966; Whitehead, 1968; Berlo et al., 1969; Applbaum & Anatol, 1972). Ohanian (1991) discovered that expert cognition is the most relevant component among the three dimensions of credibility. However, it should be highlighted that the expertise of an endorser in a certain field is not essential;

it is how customers perceive the celebrity endorser that is important (Hovland et al., 1953; Ohanian, 1991).

Sources credibility is also determined by their expertise. Table 3 summarized previous studies using different theories to explain how expertise in source model could influence on consumer. Typically, the match-up hypothesis is used to explain this finding in greater depth. Some researchers believe that using experts as endorsers is a very successful strategy to ensure the credibility of information sources from the perspective of consumers (Maddux & Rogers, 1980). In the Elaboration Likelihood Model (ELM), celebrity endorsement sources are used as a peripheral path rather than a central route. Consumers eventually have a positive attitude and purchasing intention toward products because of the knowledge of the endorsers (Patzer, 1983; Huang & Sarigollu, 2014). Some researchers have argued that congruency between celebrity endorsers' expertise and product category is of great importance. Consumers will be more trusting and intend to purchase the products of celebrity endorsements if these products are related to the endorsers' professional fields (Balog et al., 2008; Erz & Christensen, 2018; Stone et al., 2003).

Many researchers have demonstrated that the perceived expertise of information sources influences attitude change positively (Mills & Harvey, 1972; Ross, 1973; Horai et al., 1974; Maddux & Rogers, 1980). The professional knowledge and competence of the sources directly affect consumers' trust in products (Hovland et al., 1953). Consumers eventually develop a positive attitude and purchasing intention toward products because of the knowledge of the endorsers (Patzer, 1983).

With regard to customers' purchase intentions, celebrity endorsements used to be more effective when the celebrities are deemed as experts. Consumers believe an expert has adequate knowledge, expertise, or abilities to promote a product. As a result, celebrity endorsers with a high professional level are perceived to be more persuasive, thereby leading to consumers' favorable intention to acquire the endorsed products (Speck et al., 1988; Ohanian, 1991; Tedeschi 1972; Friedman et al., 1978).

Table 3. Different theory to explain the effectiveness of expertise on consumer

Independent Variable	Theory	Effects	Dependent Variable	Reference
Expertise	Match up	positive	attitude	Kamins, 1990; Till & Busler, 2000; Maddux & Rogers, 1980; Silvera & Austad, 2004; Choi & Rofin, 2012; Park & Lin, 2020;
	ELM Mode	positive	attitude & PI	Patzer, 1983; Huang & Sarigollu, 2014 Patzer, 1983
	Congruency	positive	PI	Balog et al., 2008; Erz & Christensen, 2018; Stone et al., 2003

Source Model	positive	attitude change	Mills & Harvey, 1972; Ross, 1973; Horai et al., 1974; Maddux & Rogers, 1980; Zhou & Mou, 2021; Rungruangjit, 2022
Persuasion Theory	positive	trust in product	Hovland et al., 1953
	positive	PI	Speck et al., 1988; Ohanian, 1991; Tedeschi 1972; Friedman et al., 1979; Buhr et al., 1987; Belanche et al., 2021; Hisashi et al., 2022

2.3.2 Source Attractiveness Model

Hovland and others (1953) pointed out that the persuasive effect of the information transmitted by an information source is affected not only by expertise and trustworthiness but also by attractiveness. According to Ohanian (1991), the attractiveness of endorsers refers to the attraction that clients perceive endorsers to have for products or services that can attract consumers' attention. The personal charm or attractiveness of endorsers relates to the physical or emotional attraction while communicating with consumers. It includes physical beauty, sex appeal, a sleek and elegant demeanor, and so forth (Ohanian, 1991).

McGuire (1968) suggested that the effectiveness of advertising persuasion depends on the attractiveness of the advertising endorser; the appearance's similarity, familiarity, and likability can affect the target group. Some subsequent studies have also confirmed that the more attractive the source, the better the persuasive effect (Petroshius and Crocker, 1989). Physical attractiveness is a tool to change attitude (Menon et al., 2001). Those who are beautiful and handsome easily attract people's attention and make a good impression on them. Thus, source attractiveness could have a substantial impact on the effect of information transmission (Baker & Churchill, 1977; Friedman et al., 1978; Joseph, 1982; Debevec & Kerman, 1984; Kahle & Homer, 1985; McGuire, 1985).

Many studies have found that physical attractiveness can easily lead to changes in consumers' attitudes toward advertising and purchase intention for products (Kanungo & Pang, 1973; Baker et al., 1977; Patzer, 1983; Kahle & Homer, 1985; Caballero & Pride, 1984; Petroshius & Crocker, 1989; Kamins, 1990; Ohanian, 1991; Miciak & Shanklin, 1994; Zachrisson et al., 2006). Celebrity endorsement can attract attention, penetrate the commercial noise, and improve the communication ability of enterprises; it can also strengthen the brand memory, strengthen the image of the product, convey credible information, improve the attention toward the product, improve the recall of advertisements, and boost the possibility of purchase (Sherman et al., 1985; Kaikati, 1987; Burnett et al., 1994). Table 4 summarized previous studies using different theories to explain how attractiveness in source model could influence on consumer.

Following persuasion theory, most studies on celebrity endorsement have proved that attractiveness makes consumers have a positive attitude and higher purchase intention toward the products and brands (Patzer, 1983; Petroshius & Crocker, 1989; Caballero et al., 1989).

In the late 1980s, the EML began to exert great influence on the research of the celebrity advertising effect. MacInnis and Jaworski (1989) believed that whether consumers choose the central path depends on consumers' information processing motivation, processing ability, and opportunity. Celebrity attraction could heavily influence endorsement effectiveness as a peripheral path when consumers have low involvement (Till & Busler, 2000). Researchers believe that the attractiveness of endorsers causes consumers to choose to purchase the products they endorse under high involvement conditions (Kahle & Homer, 1985).

Matching hypothesis and meaning transfer theory, as the theoretical background, also verify that celebrity attractiveness can affect consumers' attitudes and behaviors. According to match-up theory or match-up hypothesis, the degree of congruence between celebrity image and product information, that is, the degree of matching between the celebrity image and the product or brand recommended, is what determines the efficacy of endorsement. Physical attractiveness, according to Kahle and Homer (1985), is also a type of information source; if attractive celebrities use beauty products, they increase the transfer of such information (Kahle & Homer, 1985; Solomon et al., 1992; Kamins & Gupta, 1994; Till & Busler, 2000; Ma et al., 2004).

Table 4. Different theory to explain the effectiveness of attractiveness on consumer

Independent Variable	Theory	Effects	Dependent Variable	Reference
Attractiveness	Persuasion Theory	positive	attitude and PI	Patzer, 1983; Petroschius & Croker, 1989; Caballero et al., 1989
	ELM	positive positive	attraction PI	Till & Busler, 2000 Kahle & Homer, 1985
	Meaning Transfer Theory	positive	attitude and PI	Kahle & Homer, 1985; Solomon et al., 1992; Kamins & Gupta, 1994; Till & Busler, 2000; Ma et al., 2004; Khatri, 2006; Fatmawati & Permatasar, 2023; Febriane, 2023; Li et al., 2022; Kumar & Ramana, 2019

2.4 Theoretical Background

Information from a credible source can influence opinions, attitudes, and/or behavior through a process known as internalization (Belch & Belch, 2004). Many researchers have used the identification process of social influence theory to explain the effectiveness of celebrity endorsers, acting as credible sources, in influencing consumers' attitudes and/or behavior. An individual who shares values with another is more likely to adopt the attitudes and behaviors of that individual or group (Kelman, 1961; Belch & Belch, 2004; Erdogan, 1999). Internalization occurs when the source impacts the consumer and is accepted by the latter's particular judgment and belief system (Erdogan, 1999).

Many academics have utilized the identification process of social influence theory to explain why a person is more inclined to adopt the attitude or behavior of another person or group if he or she identifies with that person's or group's attractiveness (Kelman, 1961; Chaiken, 1979; Joseph, 1982; Patzer, 1983; Kahle & Homer, 1985). To be specific, identification is the normative social influence from within one's self to conform to one's judgment (Ohanian, 1990).

The social influence model was proposed by Kelman in 1961. The main idea is that people will have different motivations and attitudes because of different information situations or sources. The factors that affect the change in consumer attitude mainly include three levels, with identification and internalization being two of them. "Internalization" refers to the transformation of information from obedience to identification. When people identify with information, they will accept someone's behavior or opinion, making the information persuasive (Kelman, 1961).

The receiver learns and adopts the opinion of the credible endorsers, acting as the credibility source. Thus, if a celebrity endorses a product and is perceived to be an expert, then consumers are more likely to think favorably of that brand and to include it in their consideration. Attitude change also occurs as a result of an identification mechanism; when the consumer likes the attractive source, the consumer can have a positive attitude toward the advertised product. When source attractiveness is relevant to the endorsed product. Information sources can also influence consumer attitudes through a process of internalization (El Hedhli et al., 2021).

2.5 Summary

Celebrity endorsement provides effective assistance to consumers in the process of decoding information during the dissemination of information. Endorsers use their characteristics of trustworthiness, expertise, and attractiveness to enhance the effectiveness of endorsements at the level of consumers' emotional experience (liking and preference) and behavior (trying and buying). Although scholars have affirmed the role of the three factors, some of them have pointed out that the strengths of the three factors are not the same. For example, Ohanian (1991) conducted an empirical analysis and showed that advertising endorsements exhibiting expertise would have more significant effects on consumers' purchase intention in comparison with advertising endorsements with the characteristics of attractiveness and trustworthiness. However, whether source credibility is still more important than source attractiveness in the online celebrity endorsement needs to be further verified.

Meanwhile, recent studies have shown that celebrity endorsements are not only limited to traditional mass media, as increasingly richer ways of communicating information have also begun to emerge. When examining the effects of endorsements, it is too simplistic to consider the effect of the source alone. The types of information dissemination platforms and the types of celebrity endorsers also need to be considered. These contents will be summarized and discussed in the next chapters.

3. Online Celebrity Endorsement

3.1 Background of Online Celebrity

Today, the term “online celebrity” refers to a commercial commodity that has grown in popularity as a result of the new interactive social media platforms. As a new sort of celebrity, online celebrity emerges and develops quickly in the context of Internet technology growth, social space expansion, and the rise of neoliberalism (Shen, 2016; Yin & Zhang, 2016).

From the point of view of the emergence of online celebrities, some academics argue that online celebrities are those who become renowned in a certain social context through unique behaviors that employ an interactive social media platform as a communication channel. In terms of celebrity impact, social influence, and economic value provided by the online celebrity and the accompanying online celebrity economy, it is an economic and social phenomenon. Many scholars have argued that the concept of online celebrity includes not only people or organizations, but also objects and symbols. According to Gamson (2011), online celebrities include not just people but also a type of culture, which might be products, businesses, cultural symbols, or even specific behaviors. Zhou et al. (2018) have considered that “online celebrities” not only refer to those who gain high visibility and extensive influence among the public through various Internet media but also include abstract concepts and objects.

Scholars believe that an online celebrity is a person with a certain perception who draws the attention of internet users and is desired by some admirers due to distinguishing characteristics such as language, gimmicks, and appearance (Zheng, 2016). Some researchers have also argued that online celebrities can quickly commercialize their own beauty and subjects by attracting enough attention and a specific number of fans on interactive social media platforms through short videos, photos, and live broadcasts (Lee & Overby, 2004). Other researchers have noted that online celebrities use interactive social media platforms to create a specific image. Through the development of their own taste, vision, and lifestyle, they hope to attract some individuals to copy and admire them. Online celebrities are endorsing products and services to their followers, leading people to purchase them (Zhou et al., 2018). Online celebrities, like traditional celebrities, are famous in their own way. Their behaviors will have an impact on specific groups of individuals. The classification of online celebrities can be summarized in Table 5.

Table 5. Types of online celebrity

	Definition	Reference
Key Opinion Leader, Influencer	Giving advices/suggestions based on own experiences and specific knowledge with a certain influence and visibility only on internet	Gilly et al., 1998; Zhou et al., 2018; Lou, 2019;

Online Celebrity, Internet Celebrity	a person with a certain image who draws the attention of internet users and is desired by some admirers due to distinguishing characteristics	Gefen & Straub, 2003; Uzunoglu & Kip, 2014; Fern et al., 2015; Thamaraiselvan, 2017; Wang & Liu, 2022; Park & Lin, 2020
---	---	---

3.2 Online Celebrity Endorsement VS. Traditional Celebrity Endorsement

In recent years, researchers have paid more attention to youtubers, or vloggers. Online celebrity endorsement is more successful than traditional celebrity endorsement (Schouten et al., 2020). Since researcher believed that an online celebrity endorsing a product may easily turn their followers into customers, which would boost potential consumer interaction and reduce the cost of transmitting advertising information to the target audience (Ahmadi & Ieamsom, 2021; Trusov et al., 2009). It seems that online celebrity endorsements are gradually replacing the status of traditional celebrity endorsements in online media. Therefore, it is necessary to compare the two types of celebrity endorsement from multiple perspectives and distinguish the similarities and differences in their endorsement effects in detail.

3.2.1 Similarity between Online Celebrity Endorsers & Traditional Celebrity Endorsers

Attractiveness

Most of the online celebrities are beautiful or handsome, talkative, attractive, friendly, and have a considerable number of loyal fans. Babutsidze in 2018 also proved that online celebrity endorsers are just like traditional celebrity endorsers have certain attractive characteristics. Other researchers also believed that online celebrities' have their distinct identities, characteristics, and personal image which are easier to attract the attention of others or get the recognition of consumers (Hu et al., 2020; Leung et al., 2022). Different from traditional celebrities who always show the best side of themselves that they want the public to know, digital celebrities are perceived as more "ordinary", approachable and authentic (Chapple & Cownie, 2017). Thus, consumers or fans could have a more authentic understanding of their personality, and people who follow them can find their resonance more easily and conveniently.

Expertise

Although most online celebrities get attention through an event that subverts people's normal traditional thinking. However, those who are continuously famous online mainly focus on communication content. They have certain professional knowledge in certain aspects, and some of them have unique and novel views that could make people think deeply and arouse resonance. Kim and others (2021) have stated that an influencer's ability, experience, and competence induce followers to trust the influencer. This can be evidenced by a previous qualitative study in which social media users attend to a source's competence in knowledge or experience when following

Instagram celebrities (Djafarova & Rushworth, 2017; Djafarova & Trofimenko, 2019). Thus, the perceived expertise of the online celebrity will create a more credible source for the consumer.

Trustworthiness

Online celebrities have been relying on fans to survive since the beginning of their growth. Online celebrities are naturally equipped with the advantages of attracting targeted fans, operating fans, dropping the body and opening the heart to interaction and communication with fans. Consumers develop a more trusting attitude towards products by watching their real-life use of products in their daily lives. As opposed to traditional celebrities, consumers tend to view online celebrities as more sincere and trustworthy (Lee and Eastin, 2020). Compared to traditional celebrities, online celebrities may be better at operating and managing their fans, not to mention the buying habits and lifestyles of their users. Thomson (2006) also demonstrated that Instagram celebrities were perceived to be “more like us,” they would be perceived as more trustworthy.

Summary

In general, online celebrity endorsers are also seen as information sources with the characteristics of “attractiveness”, “expertise”, or “trustworthiness”. Online celebrity endorsements could also influence the consumer’s final decision.

3.2.2 Differences between Online Celebrity Endorsement & Traditional Celebrity Endorsement

Based on previous studies and definitions on traditional celebrity endorsement and online celebrity endorsement, we summarized the several differences aspects between them (Table 6). Finally, these differences lead the endorsement into different para-social relation (PSR) and social presence.

Table 6. Different aspects between traditional celebrity endorsement and online celebrity endorsement

	Traditional Celebrity Endorsement	Online Celebrity Endorsement
Information Source	A person who is well-known to the public for his/her accomplishments in fields such as sports, entertainment, politics, broadcasting, and business (Friedman & Friedman, 1979).	A person who draws the attention of internet users with a certain influence and visibility only on internet and due to distinguishing characteristics (Gefen & Straub, 2003)
Information Media	Mass Media: TV, Video, Post (One way PSI)	Interactive social media: YouTube, Instagram (Two-way PSI)
Information Producer	Advertiser, Company	Online celebrity endorser (Hwang and Zhang, 2018; Zafar et al., 2021)
Acting Role	Endorser	Endorser, Key Opinion Leader, Consumer

Different in Para-social Relation

Unlike traditional celebrity endorsers, online celebrity endorsers are born and active on interactive social media platform. They are approachable and can easily relate with their audiences or followers and have strong social impact through developing intimate relationships with them who subscribe to their content (Childers et al., 2019). Finally, it makes followers or consumers feel closer to them and see them as friends (Monge-Benito et al., 2020; Gannon & Prothero, 2016).

Moreover, compared to traditional celebrity endorsement, the interactive social media platform provides a way for online celebrity endorsers to share similar interests with their followers, which not only do consumers form in the same social group with endorser in a certain way which makes their relationship (PSR) more intimate, but also leads consumer to identification better on online celebrity endorser and giving additional influence over their followers (Belanche et al., 2021; Schouten et al., 2020).

Different in Social Presence

Unlike traditional celebrity endorsement, which is only one-way PSI through mass media, the media that online celebrity endorsement represents is the interactive social media platform, which allows two-way PSI between consumer and online celebrity endorser. Consumers can access information from online celebrity endorsers in a variety of ways, and online celebrity endorsers can receive and respond to consumer comments in a timely manner. The existence of interactive social media platforms not only enhances the methods of information transmission but also makes information content more vivid (Kahai & Cooper, 2003). Due to its strong PSI characteristics, consumers' experience of social presence is enhanced (Brade et al., 2017). Here, the social presence is how the person at the other end of the communication channel is felt in the virtual experience (Biocca et al., 2003). According to Steuer (1992), who conducted research on the interactivity of influencers, three interactivity characteristics have been identified: two-way, timely, and mutual control. These characteristics have been evaluated and substantially validated by academics through empirical investigations (Yoo et al., 2010; Noort et al., 2012; Yoo and Park, 2016). Based on this, it's possible that online celebrity endorsers will be able to spread advertising information more effectively and quickly, while also making the information more trustworthy, by using interactive elements (Weisberg et al., 2011).

On the other hand, different from traditional celebrity endorsers, online celebrities are both brand endorsers and content creators (Kay et al., 2020; Lee & Watkins, 2016). The advertising information contents endorsed by online celebrity endorsers are mostly created by themselves (Von Mettenheim & Wiedmann, 2021; Ye et al., 2021). They achieved the advertising endorsement effect through self-promotion and self-generated content management on interactive social media platforms. Because self-created information is not only closer to consumer identification and entertainment, but also easier to influence possible target customer groups as well as update and modify their content information through the platform in order to continuously deepen the influence of the products they promoted, improving the quality of information and optimizing word of mouth (Brown & Hayes, 2008; Lou & Yuan, 2019). Online celebrity endorsers,

for example, could include the endorsements in their daily vlogs to reflect the features and benefits of the endorsed products. In this way, it's more likely to resonate with consumers, who will feel a deeper social presence when they receive the information (Jin et al., 2019). And finally, this approach enhances the effect of online celebrity endorsement.

Different in information receiving

Finally, due to the PSI of interactive social media platform, online celebrities try to share their own feelings and introduce relevant knowledge and information. In this situation, online celebrities, in addition to being endorsers, also serve as key opinion leaders and consumers (Casalo et al., 2020; Shan et al., 2020; Zhang et al., 2017; Till & Busler, 2000; Choi & Rifon, 2012). Because of this, people are more likely to believe what online celebrities say, and what they say has a greater impact on what consumers want to buy. As for the consumer, they have ability of both receiving the information passively and searching and choosing the information actively in the context of social interactive media platform which the mass media cannot provide. Such an option will lead consumers to have a more positive attitude of celebrity endorsement.

3.2.3 Summary

In general, in the field of advertising and endorsing, online celebrities, as opinion leaders, celebrities, consumers, and other multiple identities, can promote consumers' behavioral intentions through their professional knowledge, trustworthiness, and attractiveness. In the process of two-way PSI with consumers, attention and stickiness of consumers are improved (Wang et al., 2017; Ding & Wang, 2010). To sum up, as endorsers, online celebrities can stimulate consumers' purchase intentions to a greater extent as well as have a more lasting influence on consumers' purchase intentions.

3.3 Effectiveness of Online Celebrity Endorsement

Online celebrities are now being studied using sociology, communication, and economics theories, among other approaches. In several studies, researchers look at online celebrities' communication roles and characteristics through the framework of communication. Sun and Wang (2019) conducted literature on the economics of online celebrities based on celebrity theory and believed that online celebrities are new types of celebrities. The influence of online celebrity endorsement can be mainly divided into two aspects: the influence on consumers and the influence on the brand

3.3.1 Effectiveness of Online Celebrity Endorsement on Consumers

Online celebrities are playing an important role in the e-commercial market. The current research mainly focused on the effects of advertising communication. And the influence of the characteristics of online celebrities on consumers. As can be seen from the Table 7, different researchers have concluded that the different characteristics of online celebrity endorsement have impacts on consumers' attitudes and behaviors (reception, purchase).

Table 7. The effectiveness of online celebrity endorsement on consumers

Independent Variable	Dependent Variable	Effects	Reference
online celebrity endorsement	information reception	positive	De Veirman et al., 2017; Djafarova & Rushworth, 2017; Xiao et al., 2018
trust, e-WOM	PI	positive	Liu et al. (2015)
expertise & product complementarity		positive	Fern and others (2015),
image share		positive	Djafarova & Rushworth, 2017
expertise & attractiveness		positive	Till & Busler, 2000
para-social interaction		positive	Lee & Watkinst, 2016; Sokolova & Kefi, 2020; Hu et al., 2020; Wahab et al., 2022; Reinikainen et al., 2020;
congruence	attitudes &PI	positive	Park & Lin, 2020; Xu & Pratt; 2018; Schouten et al., 2020; Shan et al., 2020; Belanche et al., 2021
credibility		positive	Thamaraiselvan et al., 2017
type of online celebrities		positive	Jin & Phua, 2014; Park & Lin, 2020; Belanche et al., 2021; Xu et al., 2021; Lu & Chen, 2021; Li et al., 2022; Rungruangjit, 2022; Kim & Kim, 2020; Sokolova, Kefi, 2020

Most researchers believe that online celebrity endorsers are reliable sources of advertising information. Online celebrities can have an influence on customer information reception (De Veirman et al., 2017; Djafarova & Rushworth, 2017; Xiao et al., 2018).

Many researchers have explored the influence of online celebrity endorsers on consumers' purchasing intentions on interactive social media platforms. Liu et al. (2015) believe that the trust mechanism in e-word-of-mouth marketing is thought to underpin the effect of online celebrity endorsers on customers' purchase intentions. According to Fern and others (2015), the characteristics that influence customers' purchase intentions include professional expertise, and product complementarity between online celebrities and products. Djafarova & Rushworth (2017) also found that images shared by online celebrities such as youtubers and bloggers could affect the purchasing intentions of consumers. Zhu et al. (2022) found that the expertise and attractiveness of online celebrity endorsers have the potential to influence customers' purchase intentions either directly or indirectly through their own identities.

Para-social interaction is also an important factor in the effectiveness of online celebrity endorsement on consumer., according to the findings of a model developed by Lee and Watkins (2016) founded that based on the theories of parasocial interaction, people who watch luxury video blogs have a more likely to make a purchase. Researchers, Sokolova and Kefi (2020), also discovered that customers' intentions to make a purchase were positively impacted by parasocial interaction.

Some of the researchers also emphasized the effectiveness of online celebrity endorsements on both consumer attitudes and purchase intention.

Congruence used to be one of the most commonly explored important factors (Xu & Pratt, 2018; Schouten et al., 2020; Shan et al., 2020). Recently, the study of Park and Lin (2020) analyzed the live shopping experience via interactive social media platforms and found that congruency between online celebrities and products has a beneficial effect on consumers' purchase intention, attitude, and behavior throughout the process of internalization.

Thamaraiselvan et al. (2017) also analyzed the influence of the credibility of online celebrities on consumers' attitudes towards charity and purchase intentions of brands. Jin and Phua (2014) analyzed the influencing factors of the popularity of online celebrity endorsers, and the experimental results showed that user evaluation and the type of online celebrity had an impact on users' attitudes and purchase behavior. Yan et al. studied the influence path of online celebrity endorsers of Sina Weibo in China on consumers' consumption attitudes.

3.3.2 Effectiveness of Online Celebrity Endorsement on Brands

Some scholars have studied the influence of online celebrities on brands. The following table summarized different characteristics of online celebrity endorsement could make effect on different aspects of brand (Table 8).

According to the findings of Duthie and others (2017), the awareness of online celebrity endorsers has the potential to increase the popularity of brand information. Roy & Jain (2016) concluded that consumers' perception of an online celebrity's personality, credibility, attractiveness, emotions, performance, values, and persuasion could be transferred to the brand through brand endorsement. Uzunoglu and Kip (2014) demonstrated that sustained interaction and the development of relationships between brands and online celebrities may increase the brand's overall influence. Che Siyu and others (2019) found that congruence degrees between online celebrity endorsers and brands had a positive correlation with consumers' attitudes towards brands. There are also scholars studying the interaction between online celebrities and fans can enhance brand communication between companies and consumers (Uzunoglu & Kip, 2014; Hu et al., 2020; Reinikainen et al., 2020; Sokolova & Kefi, 2020).

Table 8. The effectiveness of online celebrity endorsement on brand

Independent Variable	Dependent Variable	Effects	Reference
awareness of online celebrity endorsers	brand information	positive	Duthie et al., 2017
personality, credibility, attractiveness, emotion, performance, values, persuasion	brand endorsement	positive	Jain & Roy, 2016
congruence	brand value	positive	Che et al., 2019; Xu & Pratt; 2018; Schouten et al., 2020; Shan et al., 2020
interaction		positive	Uzunoglu & Kip, 2014; Hu et al., 2020; Reinikainen et al., 2020; Sokolova & Kefi, 2020

3.4 Summary

According to a review of the existing literature, researchers often utilize sociology, communication, and other theories to investigate the features of online celebrity endorsers and the interaction between online celebrities and consumers on interactive social media platforms. It can be found there are certain commonalities between online celebrity endorsers and traditional celebrity endorsers. However, compared with traditional celebrities, online celebrity endorsers not only pay attention to the credibility of information sources but also attach importance to the emotional connection with consumers.

Previous studies indicated that the important indicators to measure the influence of online celebrity endorsements such as credibility, expertise, similarity, interactivity, and attractiveness can be summarized based on the behavior characteristics of online celebrities. However, it has not been explained theoretically which the most significant influential characteristics of online celebrity endorsers on interactive social media platforms could improve fans' intentions.

4. Para-social Interaction Theory

4.1 Concept of Para-social Interaction

Para-social interaction (PSI) was first proposed by Horton and Wohl (1956) when describing the audience's reaction to media figures. It is used to explain how people's habits of watching television for extended periods would build a closeness similar to that of real-life communication and create emotional ties between them and produce a virtual social interaction (Horton & Wohl, 1956). Rubin et al. (1987) subsequently identified PSI as the interpersonal engagement of media users with consumed content, including "seeking guidance from media figures, viewing media figures as friends, imagining themselves as part of the social world of favorite programs, and longing to meet media performers". In the advertising endorsement field, Wang and Yu (2006) think that para-social interaction produces a feeling of intimacy similar to face-to-face communication. Interaction between the endorsers and the consumers, whether online or offline, to provide the consumer with a feeling of social presence.

Initially, PSI was characterized as a one-way path, the viewer/consumer believes that various signals of media personalities (such as looks and body language) are the performances of individuals attempting to communicate with themselves (Rubin & McHugh, 1987). For traditional celebrity endorsements, PSI is a one-way behavior output of the audience, which is also called "traditional PSI". It does not require substantive feedback from the other side. The suggestions of celebrity endorsers are not aimed at specific consumers. And the responses of the viewers may not be received by the celebrity endorsers. Both parties are engaged in one-way conversation at this time (Hartmann & Goldhoorn, 2011). However, the scenario-based and realistic nature of social media platforms has changed the interactive forms of advertising communication. The one-way PSI gradually passes into a two-way PSI which is seen as "Online PSI" in online celebrity endorsement field. Consumers are no longer passive recipients of information, they can also actively obtain information, interact with the endorsers further, and export information to the endorsers.

The advent of social media has altered traditional media para-social interaction in two major ways: On the one hand, social media provides more real social presence between consumers and social media figures. There is no space limitation for social media figures to use social media to record videos. Consumers can be immersed in scenes rendered by social media in the process of watching. Although social media video is similar to traditional TV media, the interaction between online celebrities and their fans is more straightforward, and the content of the video is more relaxed and authentic. On the other hand, it enhanced the para-social relationship between customers and online celebrities. In addition to watching video programs, consumers can also send comments and interact with them during the watching process. They can also browse the information of media figures on social media platforms and like,

comment, and share their experiences to increase intimacy and communication with media figures.

Researchers have demonstrated the effect of online PSI on endorsement effectiveness under social media platforms: Research has found that business owners and brands working with media personalities with a large number of loyal fans can improve the purchase intention of fans by utilizing the para-social interaction between media personalities and consumers (Gu & Gao, 2020). Such actions also improve brand satisfaction (Hartmann & Goldhoorn, 2011).

4.2 Effectiveness of Para-social Interaction

4.2.1 Para-social Interaction Acting as Dependent Variable

In the field of celebrity endorsements, researchers consider that para-social interactions are based on the process of forming consumers' impressions of the information source. Instead of testing the importance of PSI, some of the research keep to prove the importance of PSR on celebrity endorsement effect (Hu et al., 2020; Reinikainen et al., 2020; Sokolova & Perez, 2021; Wahab et al., 2022). And others tried to figure out different influential factors could make effect on PSI in the celebrity endorsement which can be shown in Table 9.

Table 9. Influential factors on PSI

Independent Variable	Mediator	Dependent Variable	Effect	Reference
attractiveness		PSI	positive	Bandur, 2009; Knoll et al., 2015
social & physical attractiveness		PSI	positive	Lee & Watkins, 2016
congruence	PSI	PI	positive	Sukhdial et al., 2002; Sokolova & Kefi, 2020; Men & Tsai, 2016; Xu et al., 2021; Zhou & Mou, 2021
attractiveness, expertise image	PSI	PI	positive	Rubin & McHugh, 1987; Pan, 2015; Knoll et al., 2015; Sokolova & Kefi, 2020

Initial levels of para-social interaction will be increased when endorsers are categorized as more attractive. Endorsers will bring about more positive consumer attitudes toward the brand by increasing positive para-social interactions (Knoll et al., 2015). Online celebrities take advantage of their physical attractiveness, expert image, and other characteristics to enhance para-social interaction with fans, further improving the reception of product information by fans and enhancing the evaluation and purchase intention of advertised products (Rubin & McHugh, 1987; Pan, 2015; Knoll et al., 2015; Sokolova & Kefi, 2020). Lee and Watkins' s (2016) empirical findings suggest that the attractiveness of vloggers (social attractiveness and appearance attractiveness) has a positive effect on para-social interactions. However, Sokolova and Kefi (2020) have indicated whether the effect of physical attractiveness is significant depending on consumers' definition of "beauty" and the positioning of endorsers, e.g., sporty vloggers do not have to be beautiful but healthy. Others have also demonstrated that

PSI could mediate the relationship between congruence and consumers' purchase intention (Xu et al., 2021; Zhou & Mou, 2021).

4.2.2 Para-social Interaction Acting as Independent Variable

Most studies have validated the importance of para-social interaction in the marketing process. Table 10 summarized how PSI, acting as independent variable, make effect on different variables. In studies on the marketing effectiveness of celebrity endorsements, scholars have explored the influence of para-social interaction on consumer attitudes (Behm-Morawitz, 2013; Men and Tsai, 2016; Chung and Cho, 2017), media personality attraction (Knoll et al., 2015; Lee and Watkins, 2016), and the congruence (Thorson & Rodgers, 2006; Lee and Watkins, 2016; Sokolova and Kefi, 2020; Kim & Kim, 2020).

Table 10. The effectiveness of PSI on effectiveness of celebrity endorsement

Independent Variable	Dependent Variable	Effect	Reference
PSI	Attitudes, PI	positive	Behm-Morawitz, 2013; Men and Tsai, 2016; Jin & Ryu, 2020
PSI	Personality attraction	positive	Knoll et al., 2015; Lee & Watkins, 2016
PSI	congruence of attitudes	positive	Thorson & Rodgers, 2006; Lee & Watkins, 2016; Sokolova and Kefi, 2020; Kim & Kim, 2020

Some researchers have explored how para-social interaction can influence consumers' attitudes and purchase intentions through source credibility (Table 11). According to empirical research, para-social interaction may have a role in determining the perceived reliability of information (Fogg et al., 2003; Metzger, 2007; Kim et al., 2012; Metzger & Flanagin, 2013). Substantial progress has been achieved in research based on para-social interaction theory. According to Gong and Li (2017), endorsement effects are mediated by the legitimacy of the source in para-social interactions between fans and celebrities. The empirical study of Chung and Cho (2017) also proved that the high degree of interaction, friendship, and understanding fans obtain through para-social interaction enhances the credibility of celebrity information. When consumers establish a para-social interaction with an online celebrity through multiple social media platforms, they tend to regard the online celebrity or media person as a reliable information source and effective information to help them make decisions (Colliander & Dahlen, 2011).

Table 11. The relation between PSI and source credibility in celebrity endorsement

Independent Variable	Mediator Variable	Dependent Variable	Effect	Reference
PSI		source credibility	positive	Fogg et al., 2003; Metzger, 2007; Kim et al., 2012; Metzger & Flanagin, 2013
PSI	source credibility	decision making	positive	Colliander & Dahlen, 2011
PSI	source credibility	PI	positive	Chung & Cho, 2017; Gong & Li, 2017

Other researchers proved the importance of para-social interaction on consumers' purchase intention by studying the relationship between para-social interactions and para-social relationship. As can be seen in Table 12, some studies' findings indicate that when para-social interaction produced by the features of online celebrities improves, consumers' initial resistance to such information endorsed by online celebrities gradually decreases (Moyer-Gusé & Nabi, 2010). This means that in the endorsement of online celebrities, the para-social relationship between online celebrities and fans or consumers is enhanced, which will lead to an improvement in the fans' acceptance degree of the endorsed brand or product. Tsai and Men also demonstrated this finding in 2017. They looked at how fans interact with online celebrities and found that the more online celebrities interact with fans or customers as if they were friends, the more fans will like the endorsed products or brands (Tsai & Men, 2017). Moreover, when consumers build a para-social relationship with online celebrities several times, they tend to perceive online celebrities as trustworthy and effective information sources to help them make decisions (Colliander & Dahlen, 2011). Kamin (1990) shared this viewpoint in his research. He believed that whether celebrity endorsement could achieve positive effects was affected by the image and lifestyle of the endorsers.

Table 12. The relation between PSI and PSR in celebrity endorsement

Independent Variable	Mediator Variable	Dependent Variable	Effect	Reference
PSI	PSR	acceptance	positive	Moyer-Gusé & Nabi, 2010
PSI	PSR	attitude	positive	Tsai & Men, 2017
PSI	PSR	trustworthy; decision making	positive	Colliander & Dahlen, 2011
PSI	PSR	image; lifestyle	positive	Kamin, 1990

4.3 Summary

This section reviews the contents and roles of para-social interaction in the context of new media, based on traditional para-social interaction. Previous studies have highlighted the differences between the new interactive social media platforms and traditional media platforms, and they have also clarified the broader role of interaction in the new social media platforms. Nevertheless, it has been overlooked that the new media platforms also have the same functions and features of one-way interaction as traditional mass media.

Interactive social media expands the possibilities for para-social interaction between customers and online celebrities. Through literature, it was found that para-social interaction can play an active role in the process of consumer interpretation of information. However, in the field of advertising communication, it has not been proven whether the frequency of interaction and the ways of interaction on the new media platforms can lead to changes in the speed at which consumers receive information, which in turn affects the effectiveness of their celebrity endorsement.

5. Congruency Theory

5.1 Self-Congruence

In 1985, Sirgy started to discuss the concept of self-congruence. He defined self-congruence as a psychological process and result in which consumers compare their perception of a brand image (specifically, brand personality or brand-user image) with their self-concept (e.g., actual self, ideal self, social self). Sirgy (1982) summarized self-congruence into at least four dimensions: ideal self-image, actual self-image, social self-image, and ideal social image. Actual self-image refers to the actual self-concept and image of the consumer and the personal characteristics that consumers have. Ideal self-image is the combination of the personal trait that consumers want to have and the image of themselves that the ideal wants them to have (Sirgy, 1985). Social self-image refers to a person's belief in how other people perceive him. In terms of the ideal social image, it stands for the willingness or hope of one person about how other people should think about him (Johar & Sirgy, 1989).

In the field of endorsement, the degree of identity is often reflected by the congruence between endorsers and consumers, as well as the congruence between endorsers and endorsed products or brands. The concept of identity is derived from social identity theory. Individuals increase self-esteem by maintaining a positive social identity and social comparison (Zhang & Zuo, 2006). According to social identity theory, identity is defined as the perception of sameness or belonging to a socially specific object (Ashforth & Mael, 1989). It becomes brand identity when the specific object is the brand. Lastovica and Gardner (1978) argued that brand identity is the degree to which consumers are emotionally or psychologically committed to a brand. Many scholars also consider brand identity as a concept related to consumer self-expression (Belk, 1988; Fournier, 1998). Belk (1988) proposed that consumers prefer brands that help them express themselves and use the brand's products to maintain a positive self-image. Based on this, Bagozzi and Dholakia (2006) argued that brand identity refers to the degree to which consumers perceive their self-image as congruence with the brand image.

When investigating the influence of endorsement, congruence is frequently seen as an essential factor. Typically, researchers investigate the effect of celebrity-product congruence on the effect of endorsement. As businesses recognized the value of consumer relationships in affecting the effectiveness of endorsements, an increasing number of academics began to focus on the impact of celebrity-consumer congruence.

5.2 Endorser-Brand Congruence

The study of the congruence of celebrity endorsements has become one of the most popular topics in the field of celebrity advertising effectiveness research. Researchers discussed how congruence between endorsers and brands may lead to more effective endorsements compared to those that do not have congruence (McCracken, 1989). On

the one hand, congruence is understood as an association between the endorser and the brand attributes. Some scholars think that congruence is considered to be the common link between certain characteristics associated with the endorser and the brand (Fiske & Pavelchak, 1986; Stangor & McMillan, 1992; Kellaris et al., 1993). On the other hand, congruence refers to the similarity between the endorser and the brand, which is also known as match-up fit.

Certain studies have confirmed that the level of endorser–product congruence has an impact on consumers (Conway & Rubin, 1991; Schiappa et al., 2007; Hartmann & Goldhorn, 2011; Park & Lin, 2020; Kim & Kim, 2021; Belanch et al., 2021). Some of the researchers demonstrated the moderating effect of endorser-product congruence (Schouten et al., 2020; Xu et al., 2021). Matching theory suggests that the effectiveness of advertising depends on the congruency between the message conveyed by the celebrity image and the product information; that is, the matching degree of the celebrity image or personality with the product. The higher the match, the higher the consumer's evaluation of the endorser's credibility, attractiveness, and endorsed product. The matching hypothesis was derived from celebrity attractiveness research. If an attractive endorser endorses a product that is attractiveness-related, then if the endorser and the product are matching, the match-up can enhance consumer attitudes towards the attractiveness-related product (Kahle & Homer, 1985; Kamins, 1990; Petty & Cacioppo, 1981).

5.3 Consumer-Endorser Congruence

Since 2020, researchers have gradually shifted their attention from the similarity between product-endorser congruence to the consumer-endorser congruence which is also called as “Homophily”. Gardner and Levy (1999) argued that when consumers choose products, they prefer products whose endorsers have images or personality traits similar to their own. This is because sometimes consumers buy a product not only for its usefulness but also for its symbolic value, which satisfies their internal feelings and expectations (Levy, 1959).

Researcher indicated that a high degree of self-congruence will make the fan feel that the relationship with the celebrity is close when the fan's self-image matches that of the celebrity (Chatman, 1989). When the celebrity can reflect the fans' self-perception, it will prompt the fans to extend the relationship between themselves and the celebrity (Huber et al., 2010). Researchers think that endorser-consumer congruence of personal interest (Casalo et al., 2020; Argyris et al., 2021); physical and value homophily (Lu & Chen, 2021); attitude homophily (Kim & Kim, 2020; Sokolova & Kefi; 2020; Shan et al., 2020) could make influence on consumers' expected brand value, attitude and purchase intention. Whang, Allen, and Sahoury (2004) confirmed that trust is formed when there is a high degree of congruence between fans and celebrities. The congruence between the celebrity and the consumer can eventually work through celebrity endorsement to create congruence between the consumer and the endorsed brand.

Moreover, people would prefer products whose image is consistent with their self-concept. Consumers usually choose the brand consistent with their image (Sirgy, 1982). Through product selection and purchase, they define, maintain, and improve their self-congruence (Hosany & Martin, 2012). Aguirre-Rodriguez et al. (2012) found that when a consumer's self-congruity matches the personality or image of the brand and product they bought, they have a more positive view of the brand and are more likely to buy it again.

5.4 Theoretical Background

Many researchers have used the social identity theory to explain how congruence make affects celebrity endorsement. Tajfel (1972) introduced the social identity theory and described that an individual's awareness of belonging to a particular social group, as well as their feelings and values as a result of a group membership. To put it another way, "when the individual recognizes that he belongs to a specific social group, he is aware of the emotional and value meaning that being a member of a group simultaneously brings to him" (Tajfel & Turner, 1986). Here, a social group is defined as a group of more than two people. People in the same social group typically share the following traits: 1) Members of the same social group identify and evaluate themselves in the same way. 2) Members of the same social group have the same definition of who they are. 3) When interacting with people outside the social group, people follow the same pattern of interaction (Hogg, 2006). Social identity can positively predict brand attitude and emotional investment, and then emotional investment plays a partial mediating role in the influence of fan identity on brand attitude (Fu, 2019). According to the research of Madrigal (2000), consumers with a strong sense of identity are more likely to purchase products endorsed by athletes.

In the context of the Internet era, rapid information transmission and social identity significantly increase the frequency and acceleration with which social groups integrate and disperse. The integrity of the original social identity foundation is weakened to some degree by the dynamic changes of time, space, and identity foundation fragmentation. People can selectively display their personal characteristics due to the network's virtual characteristics. As a result, individual identity has characteristics of virtuality and construction, whereas the social identity of members is more dynamic and limitless. Thus, members of the same social group can join different groups on online social media platforms, and a diversified network identity brings a diversified social identity. According to the characteristics of social identity theory, Tajfel & Turner (2004) stated the following three theoretical concepts: 1) Individuals attempt to create and maintain a positive social identity. 2) Positive social identity relies on an unequal comparison between in-groups and out-groups. 3) If social identity is unsatisfactory, individuals will attempt to quit their existing group and join a more desirable group, or they will try to make their current group more satisfying.

Therefore, the higher the congruence within the same social group, the easier it is to generate a positive attitude. Therefore, when consumers and endorsers are in the

same social group, the higher the congruence and social identity, the better the consumers' attitude toward the endorsers, and this attitude is eventually internalized into the consumers' attitude toward the endorsed products.

5.5 Summary

In the research field of celebrity endorsements, previous studies were more focused on how the attitude congruence between consumer and endorser influences the endorsement's effectiveness. However, the congruence should be conceded more widely, especially in the context of interactive social media platforms, social identity happens faster due to the PSI. Congruence's effectiveness on endorsement cannot exist independently. Thus, how the connection (PSI and congruence) between endorsers and consumers works in online celebrity endorsement effectiveness should be further discussed.

6. Research Design

6.1 Definition of Concepts

Although several basic concepts involved in this study have been explained in previous chapters. It is necessary to define the concepts clearly again before the study:

- 1) **Traditional celebrity endorsement:** An individual who utilizes their public notoriety to promote products in advertisements alongside the product (McCracken, 1989).
- 2) **Online celebrity endorsement:** A person with a certain image who draws the attention of internet users and is desired by some admirers due to distinguishing characteristics (Gefen & Straub, 2003).
- 3) **Dimensions of source model:** (Ohanian, 1991)
Attractiveness: The attraction that clients perceive endorsers to have for products or services that can attract consumers' attention.
Expertise: Expertise reflects the knowledge, experience, or skill of the endorser.
Trustworthiness: Consumers' perception that endorsers are characterized by honesty, integrity, and believability.
- 4) **Para-social interaction** The interaction between audience and media figures (Horton & Wohl, 1956)
Traditional PSI (one-way PSI): Both endorsers and consumers are engaged in one-way conversation at this time (Hartmann & Goldhoorn, 2011).
Online PSI (two-way PSI): A kind of behavior that happens on interactive online social media platforms which have gradually changed from a one-way model to a two-way interactive behavior (Thorson & Rodgers, 2006).
- 5) **Celebrity-Consumer Congruence:** The extent to which an endorser matches the target audience on characteristics (Alsmadi, 2006)

6.2 Research Content & Motivation

Study 1: The Source Model Effectiveness of Online Celebrity Endorsement on Consumer

Study 1 discusses online celebrity endorsers in general, as the information sources, and how to make endorsement effects. The content and process of Study 1 is shown in Table 13.

Table 13. The content and process of Study 1

Study 1. The Source Model Effectiveness of Online Celebrity Endorsement on Consumer	
Research Question	Whether the online celebrity endorsement may have the same effectiveness of endorsement as the traditional ones
Research Aim	To determine the influence factors of source model (attractiveness, expertise, trustworthiness) on consumers' attitude and purchase intention.

Related Theory	Celebrity endorsement theory
Research Objects	All types of online celebrity endorsers
Data Collection Method	A survey to collect the data through the participants' perception of the characteristics of celebrity endorser and endorsed products
Distribution Platform	Online questionnaire distribution platform ---WENJUANXING (WJX),
Analysis Method	Maximum likelihood estimation method (MLE) is an algorithm used to calculate Covariance Structure Equation Model (CB-SEM)
Analysis Tools	AMOS Software Version 18

Study 2: The Influence of Para-social Interaction on Celebrity Endorsement Effectiveness

In study 2 we mainly discuss how the different types and different level of para-social interaction make effect on the celebrity endorsement model.

The different types of PSI could represent as different type of celebrity endorsement. The traditional para-social interaction type is a one-way interactivity. As for the online para-social interaction type, it is a two-way interactivity on online media platform which could be a unique characteristic of online celebrity endorsement. Each type of PSI could have different level of PSI. The Para-social interaction level stands for the frequency of interaction and diversity of forms of interaction on different types of media.

The content and process of Study 2 is shown in Table 14.

Table 14. The content and process of Study 2

Study 2. The Influence of Para-social Interaction on Celebrity Endorsement Effectiveness	
Research Question	How para-social interaction effect on celebrity endorsement effectiveness on interactive social media platform?
Research Aim	To distinguish differences between online celebrity endorsement and traditional celebrity endorsement on the basis of PSI.
Related Theory	Celebrity endorsement theory; Para-social interaction
Research Objects	Online and Traditional celebrity endorsers with stimuli endorsed product
Data Collection Method	Two sets of survey on the participants' perception of the characteristics (source model and PSI) of both traditional and online celebrity endorsers
Distribution Platform	Online questionnaire distribution platform ---WENJUANXING (WJX)
Analysis Method	MLE is an algorithm used to calculate CB-SEM; Multi-group Analysis
Analysis Tools	AMOS Software Version 18

Study 3: The Influence of Congruence on Celebrity Endorsement Effectiveness

In Study 3, we want to capture the importance of the connection between online celebrity endorser and consumer. We believe that the congruence and PSI between endorser and consumer are the two important variables to make effect in celebrity endorsement model. Congruence could make a new path way between source model

and consumers' attitude, and PSI could moderate this path. The content and process of Study 3 is shown in Table 15.

Table 15. The content and process of Study 3

Study 3. The Influence of Congruence on Celebrity Endorsement Effectiveness	
Research Question	How PSI and congruence influence on endorsement effects in the context of interactive social media platform.
Research Aim	To investigate the relationship among the source model, PSI, and congruency.
Related Theory	Celebrity endorsement theory; Para-social interaction; Congruence theory
Research Objects	Online celebrity endorsers who could endorsed mobile phone
Data Collection	A survey on the participants' perception of the characteristics of online celebrities, PSI and congruence with stimuli endorsed product.
Method	Online questionnaire distribution platform ---WENJUANXING (WJX)
Analysis Method	MLE is used to calculate CB-SEM; Multi-group Analysis (MGA)
Analysis Tools	AMOS Software Version 18

6.3 Covariance Structure Equation Model

The Structural Equation Model (SEM) is a subset of the Latent Model. SEM is more widely employed in field of psychology and other social sciences to detect the third variable (mainly mediating variables and moderating variables). It is also concerned with latent causation, measurement composition, and overall model fit. The least squares-based structural equation model (PLS-SEM) and covariance-based structural equation model (CB-SEM) are the most common distinctions. SEM is used to test the Confirmatory factor analysis, higher-order factor analysis, path and causality analysis, multi-period design, uniform model, multi-group comparison, and other applications. LISREL, Amos, and EQS are three popular structural equation model analysis software. CB-SEM is based on the multivariate normality distributional assumption. The variation of two consecutive variables' paired scores was calculated in general to reflect the degree of covariation or correlation between the two variables.

Maximum likelihood estimation method (MLE) is an algorithm used to calculate CB-SEM. Actually, MLE is the most commonly utilized structural equation analysis approach. The MLE method requires that the variables be normally distributed over many variables. Skew and kurtosis are measures of data non-normality. Skewness indicates data symmetry, while kurtosis indicates data flatness. Through three studies, this dissertation primarily investigates the degree of fit of the conceptual model. We investigate not only the influence of "attitude" and "congruence" as mediating factors in the model but also the role of "PSI" as a mediator variable to modify different paths. Thus, CB-SEM is more consistent with path and model measurement and testing.

6.4 Data Analysis Explanation

Reliability refers to the Consistency and Stability of a measurement result. **Construct Validity** includes Convergence Validity and Discriminant Validity. The following Table 16 summarized the indicators that belong to reliability and validity, and their standard values are also shown in it.

Table 16. Explanation of Reliability and Validity

Reliability & Validity	Definition	Standard Value	References
Cronbach' s α	The reliability index to analyze the internal consistency of the scale measurement tools	> 0.7: the internal consistency of the measurement dimension was good	Bland & Altman, 1997
Factor Loadings	To test the degree of differentiation between different dimensions and the degree of aggregation within the same dimension.	> 0.6: the fit degree of the model should reach the corresponding standard.	
Combination Reliability (CR)	A method used to assess comprehensive reliability, which tends to be better than arbitrary internal consistency reliability.	> 0.7: the measurement dimensions would have good Convergent Validity	Hair, 2009
Average Variance Extracted (AVE)	To measure convergence validity. It is calculated based on standardized factor loading.	> 0.5: the measurement dimensions would have good Convergent Validity	Hair, 2009
Discriminant Validity	The square root value of dimension AVE is selected to compare with the correlation coefficient of this dimension and other dimensions	The correlation coefficient between any two dimensions < the AVE open square root of each dimension (diagonal bold number): there is sufficient discriminative validity	Hair, 2009
Variable inflation Factor (VIF)	A measure of multicollinearity. Multicollinearity refers to whether there is a linear relationship between the independent variables or items.	The closer the value of VIF is to 1, the lighter the multicollinearity will be.	Marquardt, 1960

The fitting degree of a structural equation model is the degree of consistency between the theoretical model and the actual data. Table 17 summarizes the indicators belonging to the degree of fit, and their standard values are also shown in it.

Table 17. Explanation of the degree of fit

The Degree of Fit	Definition	Standard Value	References
Chi-square (χ^2)	The fitting degree between the variable correlation matrix in the model and the correlation matrix in the actual situation	The larger the value, the greater the difference between the model and the actual situation	Friedrich, 1863

χ^2/df	The ratio between chi-square and degrees of freedom. A measure of overall model fit	The value between 1 and 3 indicates that the model fit degree is acceptable.	Bentler & Bonet, 1980
Root Mean Square Error of Approximation (RMSEA)	Approximate root means square error, which represents the square root of the sum of squares of the asymptotic residuals.	< 0.08: the better the fitting degree will be.	Bentler & Bonet, 1980
Goodness of Fit Index (GFI)	The fitting degree of regression line to the observed value		Bentler & Bonet, 1980
Adjusted Goodness of Fit Index (AGFI)	To diagnose whether model fitting is caused by too much coordination of familiar country fitting data.	The closer the value is to 1, the better the fitting degree will be.	Bentler & Bonet, 1980
Relative Fit Index (RFI)	RFI is derived from NFI, and its norm is between 0 and 1		Bentler & Bonet, 1980
Normed Fit Index (NFI)	Representing the difference between the preset model and the independent model		Bentler & Bonet, 1980
Incremental Fit Index (IFI)	Incremental fit index, IFI are less affected by sample size, so they are liked by researchers	> 0.9: the better the fitting degree will be.	Bentler & Bonet, 1980
Lewis' s index (TLI)	TLI is the adjustment index of NFI. TLI is used to consider the complexity of the model.		Bentler & Bonet, 1980

The following Table 18 shows the indicators and standard value when testing the CB-SEM.

Table 18. Explanation of analyzing CB-SEM

CB_SEM	Definition	Standard Value	References
Path coefficient	To explain the relationship between elements in the model.	If the regression coefficient is greater than 0, the two elements are positively correlated; if the value is larger, the degree of correlation is stronger.	
P- value	To judge whether the path coefficient is significant or not	< 0.05: the path coefficient is significant	Fisher, 1962
Confidence interval	The Bootstrap method is used for 5000 simulation analyses to calculate the confidence interval A method to test the difference of path coefficients between two groups	If the confidence interval does not contain 0, the indirect effect is valid.	Hayes, 2009
Multi-group Analysis (MGA)	a median-split technique was utilized to transform a continuous variable into a categorical one.	There is a significant difference between the two groups	

7. Study 1. The Source Model Effectiveness of Online Celebrity Endorsement on Consumer

7.1 Introduction

The most essential reason for celebrity endorsements being a prevalent business promotion function is that celebrity endorsers may have a number of good personalities that may be transferred to the endorsed product or brand. With the rapid development of social media platforms like Facebook, Instagram, and Weibo (China), the interactive social media platform has evolved into more than just a single communication platform; it has also evolved into a new carrier of advertising information transmission, providing an efficient interactive environment and more implicit advertising information. Celebrity endorsers may utilize the interactive social media platform to not only push commercial content but also to exhibit themselves in a more personalized way and draw public attention by socializing and connecting with followers or potential consumers.

The increasing popularity of interactive social media platforms is also giving birth to the emergence of online celebrities, who are progressively gaining recognition as brand endorsers as a result of their expanding popularity. Academic research on the effect of online celebrities is also continuing to be conducted in the context of the booming online celebrity market and social media platforms. Online celebrities are more popular with customers, according to various studies because they have a large following and are perceived as more appealing and trustworthy than other celebrities. The usage of endorsed items or brands by consumers who have access to online celebrity endorsement information on social media platforms is more likely, as is the likelihood of purchasing them (Jin & Phua, 2014). Since online celebrity has been used widely as endorsers on interactive social media platform, we would like to find out whether online celebrity may have the same effectiveness of endorsement as traditional celebrity endorsers and which influential factors are more important to the consumer in the celebrity endorsement theory. Thus, the research question of Study 1 could be set up as, "How should online celebrity endorsers influence consumers' purchase intentions?"

We hypothesize that being the source, the characteristics "attractiveness," "expertise," and "trustworthiness" will take effect on the dependent variable "purchase intention," and based on the Theory of Planned Behavior and the Theory of Reasoned Action, we think that the "attitude towards endorsed product or brand" could be the mediating factor between the source characteristics and purchase intention. We could construct the conceptual framework shown in Figure 4 based on traditional celebrity endorsement theory.

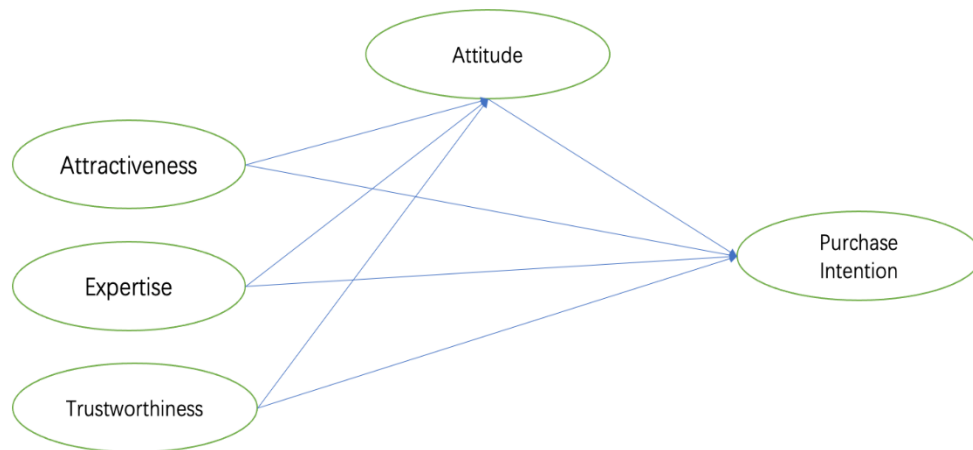


Figure 4. Conceptual Framework of Study 1

7.2 Hypothesis Development

Expertise, Attitude, Purchase Intention

The personal characteristics of online celebrities will have a synergistic effect on the brands and products they endorse and recommend. That is to say, consumers' favorable impressions of online celebrity endorsers will be transformed into their positive attitude towards endorsed brands or products (Chen, 2020). This could also be explained by using the internalization process of social influence theory. In addition to the influence of online celebrities could gained the fans' support, one of the very important reasons why brands use influencers or the online celebrity to endorse their products is that the online celebrity has a certain marketing ability in professional fields, for instance some of them have specific knowledge in beauty, fitness, technology areas. Erkan and Evans (2018) said in their study that because online celebrity endorsers are more professional, the information they give to people who buy things would be clearer. Based on the source credibility model, an online celebrity endorser who has a certain expert knowledge which is related to the endorsed product or brands would make his or her endorsement language easier to persuade consumers.

The meaning transfer theory is also can explain the importance of expertise in celebrity endorsement (Belch & Belch, 2013; Bergkvist & Zhou, 2016). The symbolic of an expertise online celebrity endorser would also transfer the same image on the endorsed product or brand, therefore, the attitude towards this brand would have the image that this product should be made based on expert skill and knowledge and thus, consumer will be reassured to purchase. The similar result that consumers' perceived expertise on endorsers would enhance consumers' attitude towards endorsed products or brand also be verified by several researchers (Maddux & Rogers, 1980; Buhr et al., 1987; Belch & Belch, 2013).

Therefore, we can deduce that the professional marketing ability of online celebrities is the expertise dimension of the effectiveness of celebrity endorsement. It is an important basis for consumers to judge the value of advertising information.

Online celebrity endorsers can help consumers reduce their perceived risks of products and improve their purchase intentions by leveraging their expertise and marketing skills in specific fields. Thus, the hypothesis can be set up as follows:

H1a: The expertise of online celebrity endorsements positively affects consumers' attitudes towards the endorsed products or brands.

H1b: The expertise of online celebrity endorsements positively affects consumers' purchase intentions.

Trustworthiness, Attitude, Purchase Intention

For online celebrities, credibility originates from long-term experience. It is based on the consumers' perceptions of what is considered acceptable in the marketplace. Consumers' faith in celebrities is a major factor in firms' decision to use their products as brand ambassadors.

Online celebrity endorsers when acting as influencers, not only have the ability to directly affect the purchasing choices of a huge number of consumers, but also have been seen as trustworthy information sources (De Veirman et al., 2017; Djafarova & Rushworth 2017). Online celebrities now play a significant role in the online shopping environment as opinion leaders as well as consumers. When acting as consumer, by experiencing the product and showing the effect and feeling after use, online celebrity could gain more trust from other consumers. Thus, consumers could have a certain amount of faith in them throughout the delivery of such information. In addition, such perception of trustworthiness in endorsers can eventually be transformed into consumers' trust in their endorsed products through the internalization process. Djafarova (2017) discovered that online celebrities are more trustworthiness in advertising endorsements than traditional celebrity endorsers. Because of the emotional connection that the online celebrity endorser creates with their followers, potential consumers are more likely to make a purchase after hearing from the celebrity. Based on the theoretical background of internalization process of social influence theory, consumers with a high level of confidence in online celebrity endorsers are more likely to purchase promoted brands or product, because of their trust on endorsers is transited into the endorsed product or brands (Chen, 2020). Therefore, we could make hypotheses:

H2a: Trustworthiness of online celebrity endorsement positively affects consumers' attitudes towards the endorsed products or brands

H2b: Trustworthiness of online celebrity endorsements positively affects consumers' purchase intention

Attractiveness, Attitude, Purchase Intention

Online celebrity used to show more real personality and their real physical appears online than the traditional celebrities. Shin et al. (2019) found that the online celebrity endorsers have good self-expression and can make their followers feel like they are close to them, much like friends. Based on the identification of social influence, the

“attractiveness” of the endorsers determines the persuasive validity and the effectiveness of communication through the process of identification. When such persuasive information is received, it means that the receiver has identified with the endorsers who transmitted the information (Cohen & Golden, 1972).

Consumer in the online environment could be much easier to find something in common with online celebrity endorsers or could be attracted deeply with someone who has the personality or physical appearance that the consumers wants to be. Therefore, consumer will not only identify with the online celebrity endorser but also the endorsed products in the end. Consumers might form connections with the endorsed product or brand because of the attractiveness of online celebrity endorsers and attitudes about online celebrity endorsers can be transferred to the endorsed brands or products and increase purchase intention further.

Therefore, it can be hypothesized as a result of this research that

H3a: The attractiveness of online celebrity endorsements positively affects consumers’ attitudes towards the endorsed products or brands

H3b: The attractiveness of online celebrity endorsements positively affects consumers’ purchase intention

Attitude & Purchase Intention

The interrelationships between attitudes and purchase intention have been studied a lot in advertising effects (Heath & Gaeth, 1994; Kalwani & Silk, 1982; Lutz & MacKenzie, 1989). The most common result is that the attitudes towards advertisement will influence on attitudes of endorsed brand or product and then subsequently make an influence on purchase intention (MacKenzie et al., 1986; MacKenzie & Lutz, 1989).

Thus, the Hypothesis could be made as following

H4: The consumers’ attitude towards endorsed products or brands positively influence on consumers’ purchase intention

7.3 Research Design

This study adopts the method of questionnaire survey to collect the primary data. The survey consisted of four main sections: research background, screening questions, measurement of scales, and participants’ information.

In the Research Background part, we explained the purpose and research background of the survey to participants.

Screening questions were used to help us to select the eligible participants with the following two conditions: people who have experience in using social media platforms; and people who have some knowledge about online celebrities and online celebrity endorsers. Thus, we can make sure that all the valid data we are going to analysis is collected from the participants who do understand the question and can give the validity answers based on their experience or perception on online celebrity endorsement.

As for the measurement of variables, it mainly involves the description of the scenario and the measurement of the variables. The scenario description would make participants get involved in the situation so that the survey results could be more accurate. Because the purpose of the study is to discuss the generality of the effectiveness of online celebrity endorsement, this survey will not be conducted for specific online celebrities.

As for the last part of asking participant information, this section collects information about the participants, including gender, age, and education level. After completing this section, participants can submit the survey.

7.4 Measurements

All the measurements in the conceptual framework were all variables that adapted based on the celebrity endorsement theory. The model in Study 1 includes five constructs, each of which was measured with multiple items (see Table 19). For three independent variables of celebrity endorsement, the construct for “trustworthiness”, “expertise” and “attractiveness” were adopted from Ohanian (1990). Participants were first asked to answer the question “Who is the first online celebrity endorser that comes to your mind when mentioning an online celebrity endorser?” Then they were asked to answer the following questions based on the online celebrity endorser in their mind. For example: I think online celebrity endorser is attractive; I think online celebrity endorser is an expert; I think online celebrity endorser is reliable, etc.

Before answering the questions about “attitude” and “purchase intention”, participants were presented with the following description: When the online celebrity in your mind is endorsing a product or brand, please select the extent to which you agree with the following description. As for the mediator variable---attitude, the construct for “attitude” is based on Spears and Singh (2004), Likert five-point scale will be given from “appealing/unappealing; good/bad; pleasant/unpleasant; favorable/unfavorable; likeable/unlikeable”.

As for the dependent variable “purchase intention” based on Spears and Singh (2004), with 4 items. Respondents will be asked to think about the situation that if the celebrity is endorsing a product, what are you going to do with the product. One example is “I am definitely going to buy the product”. All the items were measured with Likert five-point scale from 1 to 5. “1” is represented as “strongly disagree” and “5” is represented as “strongly agree”.

All the items were first translated into Chinese and then another researcher with professional translation skills translated the questionnaire from Chinese back into English again, and then comparing the translated English questionnaire with the original questionnaire, in order to assure consistency. All the measurement items for variables in Study 1 can be shown in Table 7. A simple explanation will be given at the beginning of the questionnaire, indicating the purpose of the questionnaire survey for data collection and analysis of the doctoral thesis. It also briefly introduces Chinese online celebrities and what is online celebrity endorsement, so that respondents can

have an overall understanding of the purpose of the questionnaire survey and the research object. This questionnaire will not involve a specific online celebrity endorser, but the overall cognition of consumers/respondents on the endorsement of online celebrity.

Table 19. Measurement items for variables in Study 1

Variables	Items	Measurement Items
Attractiveness (Ohanian, 1990)	Attrac1	1. I think online celebrity endorser is attractive/Unattractive:
	Attrac2	2. I think online celebrity endorser is beautiful/Ugly
	Attrac3	3. I think online celebrity endorser is classy/Not classy
	Attrac4	4. I think online celebrity endorser is elegant/Plain
	Attrac5	5. I think online celebrity endorser is sexy/ Not Sexy
Expertise (Ohanian, 1990)	Ex1	1. I think online celebrity endorser is an expert
	Ex2	2. I think online celebrity endorser is experienced
	Ex3	3. I think online celebrity endorser is knowledgeable
	Ex4	4. I think online celebrity endorser is qualified
	Ex5	5. I think online celebrity endorser is skilled
Trustworthiness (Ohanian, 1990)	Trust1	1. I think online celebrity endorser is dependable
	Trust2	2. I think online celebrity endorser is honest
	Trust3	3. I think online celebrity endorser is reliable
	Trust4	4. I think online celebrity endorser is sincere
	Trsut5	5. I think online celebrity endorser is trustworthy
Attitude towards Brand/product (Spears & Singh, 2004)	Att1	1. I think the product is appealing
	Att2	2. I think the product is good
	Att3	3. I think the product is pleasant
	Att4	4. I think the product is favorable
	Att5	5. I think the product is likable
Purchase Intention (Spears & Singh, 2004)	PI1	1. I am definitely going to buy the product
	PI2	2. I am definitely intending to buy
	PI3	3. I am having a high purchase interest
	PI4	4. I am probably buying it

7.5 Data Collection

The questionnaire was distributed by WJX randomly to the targeted respondents. After 7 days of data collection, we finally obtained 500 questionnaires after removing invalid questionnaires, such as answering the survey with a limited time, incomplete answers, etc. Since our research is about whether consumers' purchase intention will be affected by online celebrity endorsement, respondents should at least have some understanding of online celebrity and online celebrity endorsement. And using the interactive social media platform. We set some screening questions and filtered out those questionnaires which are completely ignorant/no idea of online celebrity and online celebrity endorsement through their answers. We also filtered out the data set which respondents do not use any interactive social media platform. Therefore, we finally obtained 425 valid questionnaires. The sample demographics can be shown in Table 20. The sample was based on age, gender, education level and the para-social interaction level between consumer and online celebrity endorsers. Among 425 respondents, 156 respondents were male and 269 were female. As the survey was conducted online, 317 of the respondents' age range was between 20 and 40 years old. There were more than 88% of the respondents have college degrees or above.

Table 20. Demographics of sample

	Categories	Frequency	Percent (%)
Gender	Male	156	36.71%
	Female	269	63.29%
Age	Under 20	76	17.88%
	20-30	231	54.35%
	31-40	86	20.24%
	41-50	22	5.18%
	over 50	10	1.35%
	Primary School	0	0.00%
Education Level	Middle School	11	2.59%
	High School	38	8.94%
	College	318	74.82%
	Graduates	58	13.64%

7.6 Data Analysis

The measurement model was assessed by examining the internal reliability, convergent and discriminant validity. The construct reliability and validity of this model can be shown in Table 21.

All the Factor loadings are higher than 0.7, so the items all can be used. All the items' VIF is smaller than 10, and they all related to 1 (the biggest VIF is 2.315). This shows that there is no multicollinearity problem in this model.

In terms of internal consistency, as can be seen in Table 21, Composite Reliability (CR) meets the standard requirements (> 0.7) which is ranged from 0.905 to 0.916. And Cronbach's alpha also exceeded the recommend threshold 0.7 (Hari et al., 2010). The calculated Cronbach's alpha values ranged from 0.869 to 0.885. Thus, these results in Table 21 showed the data had good convergent validity and reliability

To assess the convergent validity of the concept, the link between the latent variable and each of its indicators must be significant and the average variable extracted (AVE) must higher that 0.5, the results have showed that AVE ranged from 0.655 to 0.731 which meets the standard (Hair et al., 2012).

Table 21. Reliability and validity of measurements

Variables	Items	Factor loadings	VIF	Cronbach's Alpha	Composite Reliability	AVE
Attitude	Att1	0.763	2.025	0.885	0.886	0.607
	Att2	0.784	2.135			
	Att3	0.799	2.206			
	Att4	0.769	2.044			
	Att5	0.779	2.117			
Attractiveness	Attrac1	0.721	1.821	0.869	0.869	0.570
	Attrac2	0.778	2.052			
	Attrac3	0.755	1.955			
	Attrac4	0.740	1.862			
	Attrac5	0.777	2.045			
Expertise	Ex1	0.777	2.077	0.880	0.882	0.598
	Ex2	0.781	2.113			
	Ex3	0.789	2.178			
	Ex4	0.768	2.03			
	Ex5	0.752	1.97			
Purchase Intention	PI1	0.799	2.067	0.876	0.878	0.642
	PI2	0.847	2.315			
	PI3	0.757	2.201			
	PI4	0.797	2.175			
Trustworthiness	Trust1	0.756	1.984	0.876	0.877	0.589
	Trust2	0.764	2.025			
	Trust3	0.785	2.109			
	Trust4	0.786	2.114			
	Trust5	0.743	1.905			

The results of the correlation coefficients of Attractiveness, Expertise and Trustworthiness with Attitude ranged from 0.185-0.339, and that with Purchase intention ranged from 0.244-0.389. The correlation coefficient between Attitude and Purchase intention is 0.482. Therefore, the hypothesis of this study has been preliminarily confirmed.

As for the discriminant validity, each of the latent variables was examined by proving that it had a larger variance in common with its items than the other constructs. A construct's components shared more variance than any other construct in the model, meeting Fornell and Larcker's (1981) criterion for discriminant validity, as indicated in Table 22. Inter-construct correlations were surpassed by all diagonal values. As a consequence, the instrument's construct validity was found to be good.

Table 22. Means, standard deviations, correlations, and discriminant validity

	Attractiveness	Expertise	Trustworthiness	Attitude	Purchase Intention
Attractiveness	0.755				
Expertise	0.024	0.774			
Trustworthiness	-0.060	-0.115*	0.767		
Attitude	0.339**	0.185**	0.198**	0.779	
Purchase Intention	0.389**	0.244**	0.247**	0.482**	0.801
Mean	3.831	3.203	2.854	3.083	2.987
SD	0.715	0.743	0.732	0.820	0.787

Note: *p<0.05, **p<0.01, ***p<0.001, two-tailed; Square-root of the AVEs is reported in bold along the diagonal of the correlation of constructs.

The model fit is also tested, as we can see from Table 23. AMOS was used to build the structural equation model, and the results showed that all the fitting indexes of the model were within the reasonable range. The RMSEA is 0.029 which is smaller than 0.08; GFI is 0.943; AGFI is 0.929; NFI is 0.94, all of them are higher than 0.9. To summarize, all the results meet the standard value, so we could say that the model of Study 1 fits well.

Table 23. Model fit of Study 1

Index	χ^2	df	χ^2/df	RMSEA	GFI	AGFI	RFI	NFI	IFI	TLI	CFI
Critical value			<3	<0.08	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9
Est.	329.183	242	1.360	0.029	0.943	0.929	0.932	0.940	0.983	0.981	0.983

7.7 Hypothesis Test

7.7.1 Direct Effect

In order to better understand the links between the study model' s many aspects, a structural model was created. The path coefficient was used to examine the connection between the dependent and independent variables. Table 24 displays the structural model' s findings.

From the result, for the “Expertise”, it can have significantly positive effects on both Attitude ($\beta = 0.235$, $Z=4.571$, $P<0.001$) and PI ($\beta=0.240$, $Z=4.963$, $P<0.001$). These indicated that H1a and H1b are supported.

As for the “Trustworthiness”, it also can positively make significant effect on Attitude ($\beta=0.285$, $Z=5.415$, $P<0.001$) as well as PI ($\beta=0.270$, $Z=5.379$, $P<0.001$). That is to say, the H2a and H2b are supported.

As for the “Attractiveness”, there is a positively direct impact from Attractiveness to Attitude ($\beta=0.399$, $Z=7.211$, $P<0.001$) and Attractiveness to Purchase Intention (PI) ($\beta=0.348$, $Z=6.377$, $P<0.001$). These two results also verified the H3a and H3b.

Among these three dependent variables, Attractiveness has the greatest impact on consumers, with the effect being significantly greater than both Expertise and Trustworthiness in terms of consumer attitudes and purchasing intention. The second variable, which has a higher impact on consumer attitudes, is trustworthiness, but this variable is less influential than Expertise in the final purchase intention of the consumer.

As for the relationship between attitude and Purchase intention, the path coefficient is 0.295 ($\beta=0.295$, $Z=5.284$, $P<0.001$), which means that attitude can positively make an influence on consumers' purchase intention. Then the H4 is supported (Figure 5).

Table 24. Direct path coefficient

Path	Path Coefficients	Z	P Values	Hypothesis	Result
Attractiveness -> Attitude	0.399	7.211	<0.001	H3a	Supported
Attractiveness -> Purchase Intention	0.348	6.377	<0.001	H3b	Supported
Expertise -> Attitude	0.235	4.571	<0.001	H1a	Supported
Expertise -> Purchase Intention	0.240	4.963	<0.001	H1b	Supported
Trustworthiness -> Attitude	0.285	5.415	<0.001	H2a	Supported
Trustworthiness -> Purchase Intention	0.270	5.379	<0.001	H2b	Supported
Attitude -> Purchase Intention	0.295	5.284	<0.001	H4	Supported

7.7.2 Mediation Effect

We predict a mediating effect of attitude between each of the independent variables with Purchase Intention. In order to test this mediation, according to the suggestion of Hayes (2009), AMOS was used to conduct 5000 Bootstrap analyses, and the 95% confidence interval of Bias-corrected was calculated. If the confidence interval did not contain 0, the coefficient was significantly established (Igartua & Hayes, 2021).

As shown in Table 25, it seems that all the paths can go through from independent variables to attitude and then make positive significant effect on Purchase intention. Among them, Attitude have the strongest mediator effect on the relationship between Attractiveness and Purchase Intention ($\beta=0.118$, 95% CI= [0.073, 0.171]). Then followed by making mediator effect on the path between Trustworthiness and Purchase Intention ($\beta=0.084$, 95% CI= [0.047, 0.133]). Finally, the path with the least mediator impact is from Expertise to Purchase Intention ($\beta=0.069$, 95% CI= [0.037, 0.116]).

Table 25. Indirect path coefficient

Mediation path					β	Bootstrap			Results	
						SE	95% CI			p
Attractiveness	→	Attitude	→	PI	0.118	0.025	0.073	0.171	<0.001	Accepted
Expertise	→	Attitude	→	PI	0.069	0.020	0.037	0.116	<0.001	Accepted
Trustworthiness	→	Attitude	→	PI	0.084	0.022	0.047	0.133	<0.001	Accepted

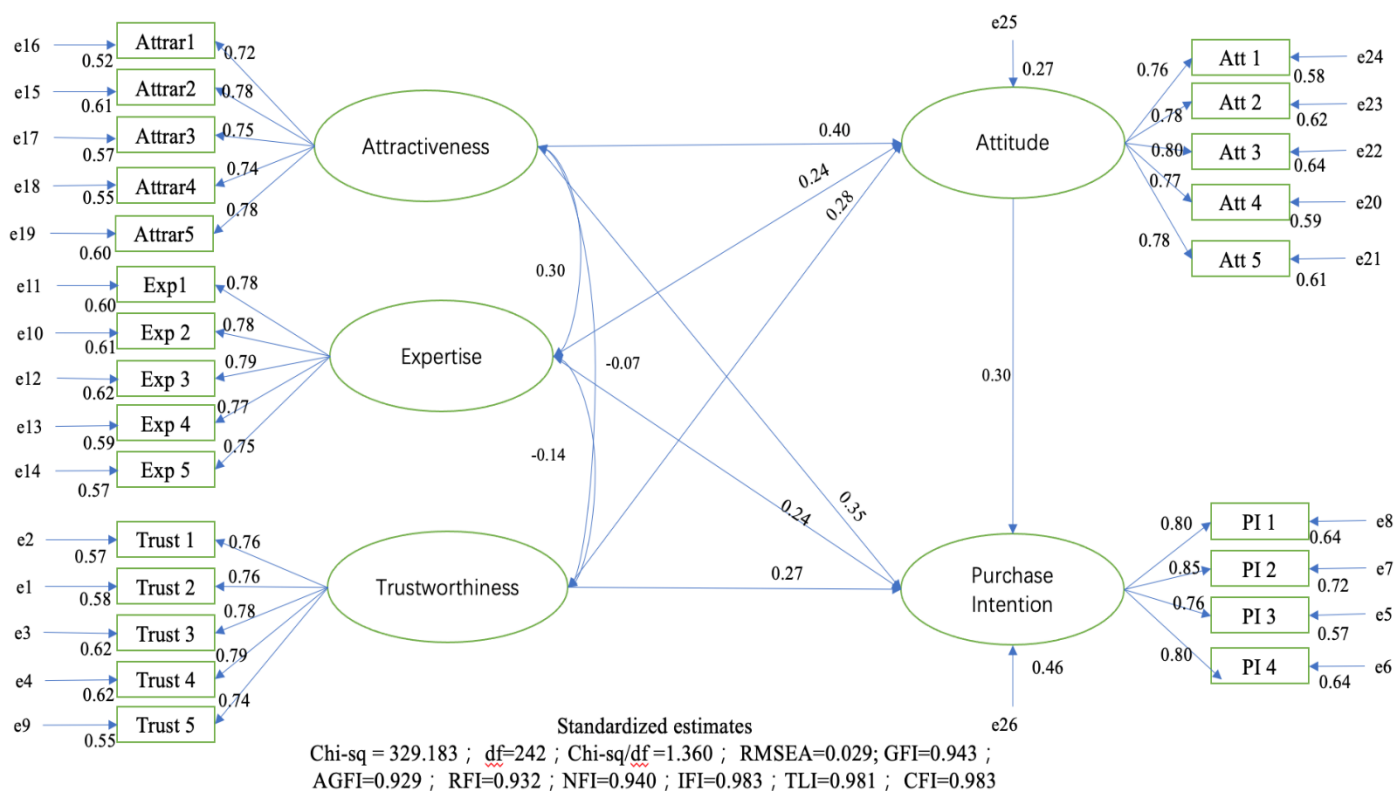


Figure 5. Path Loading & Structure Equation Model of Study 1

7.8 Discussion

Based on the research of celebrity endorsement effect, this paper verified the three factors make effect on online celebrity endorsement. Through the data statistics and analysis, it can be known that the influence of online celebrity endorsers in China can directly or indirectly affect consumers' attitude towards the products or brands and their purchase intention. The results showed that the strongest effectiveness of online celebrity endorsement on consumer should be, attractiveness. Both the direct and total effects of the influence of online celebrity endorsement on consumers' attitude and purchase intention are attractiveness, expertise, and trustworthiness. Meanwhile, Attitude can be used as a mediator variable to influence the model.

Unlike the traditional celebrity endorser, whose characteristics affect the endorsement effectiveness, generally, the trustworthiness and expertise effect are usually more important. Consumers are more likely to choose products or brands based on their trust in celebrities and the credibility of information sources. However, as online celebrity endorsers, in the context of information explosion, how to quickly attract consumers' attention to information and obtain relevant content seems to be the marketing strategy that spokespersons need to consider first. That cloud also be the reason, among our results, the most influential factor was the attractiveness. However, this does not mean that the credibility of the information source does not important. Consumers' attitude towards endorsed products and intent to buy products will be also affected by these two factors to a certain extent.

In general, under the background of e-commercial market and extensive application of interactive social media platform in China, the influence model of online celebrity endorsement can be undertaken by the three-factor model in the traditional celebrity endorsement theory. To some extent, it reveals consumers' judgment on the credibility and attractiveness of online celebrity endorsers as information sources under the social and cultural background of China. The factor structure model of credibility of sources is verified again, which constitutes the three basic dimensions to evaluate and select the credibility of endorsement in the Chinese market.

8. Study 2. The Influence of Para-social Interaction on Celebrity Endorsement Effectiveness

8.1 Introduction

In recent years, the influence of online celebrities on interactive social media platforms has grown to the point that they are surpassing the efficacy of traditional celebrities. Many consumers are more willing to put their faith in these online celebrities and wish to develop better relationships with them (Djafarova & Rushworth, 2017). Previous researchers have already verified the relationship between source credibility and PSI.

The rise of social media (short films, Vlogs, live streaming, etc.) as well as the form of interaction between online celebrity endorsers and consumers are characterized by features such as quick communication, interactivity, originality of content, and media personalization, which have attracted the attention of researchers to the concept of para-social interaction and have gradually been paid attention to and studied.

Therefore, in Study 2, in order to explore the role of “para-social interaction” in celebrity endorsement on consumers’ purchase intention, and verify whether PSI is a unique characteristic of online celebrities’ endorsement, we included the para-social interaction between celebrity endorsers and consumers on the basis of the original celebrity endorsement effect model. Therefore, the research question of Study 2 can be set as follows: How does the para- social interaction affect the effectiveness of different types of celebrity endorsements? The conceptual framework is shown in Figure 6.

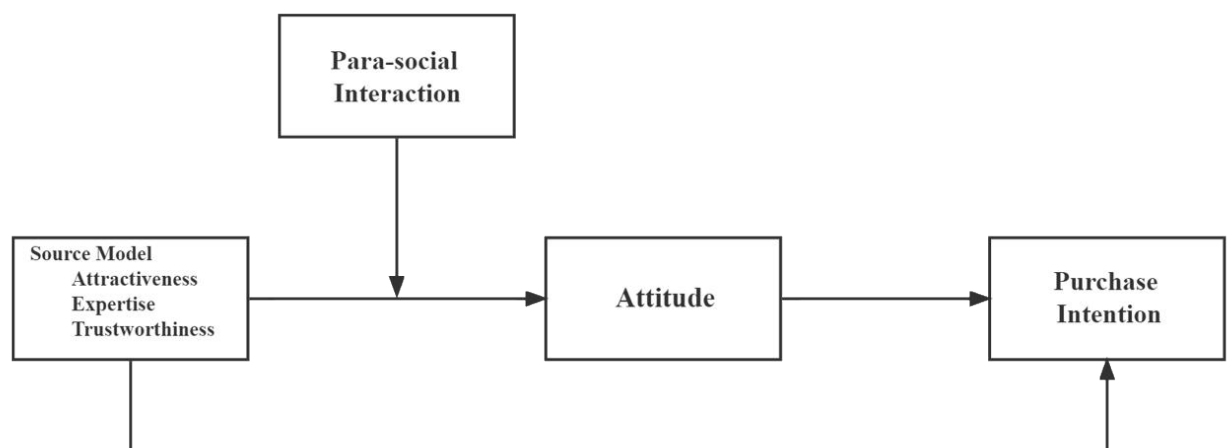


Figure 6. Conceptual Framework of Study 2

In order to further investigate how PSI works, we will discuss the two aspects of PSI “type and degree”. There are two types of PSI: Traditional PSI and Online PSI. Thus, two model can be made as following (Figure 7 & Figure 8). Different types of PSI in each of the model will be tested, PSI level will be divided into two groups (High-level & Low-level) to explore whether the impact is the same. In consequence, the conceptual models of the two groups can be shown as follows (Figure 7 & Figure 8):

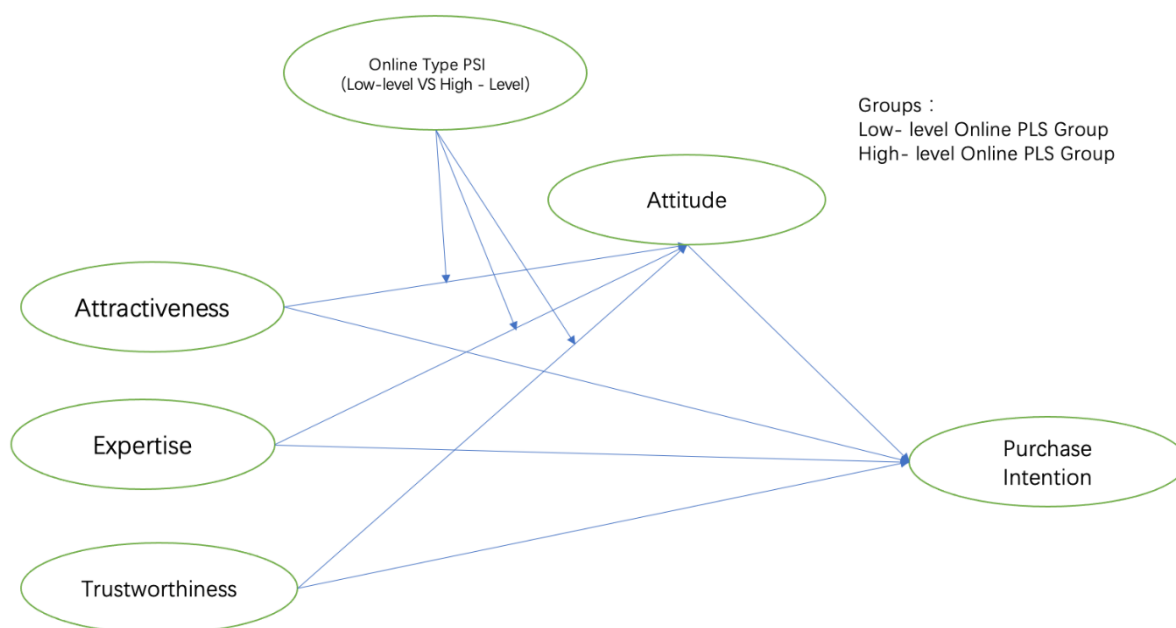


Figure 7. Conceptual Framework of Online type of PSI for Study 2

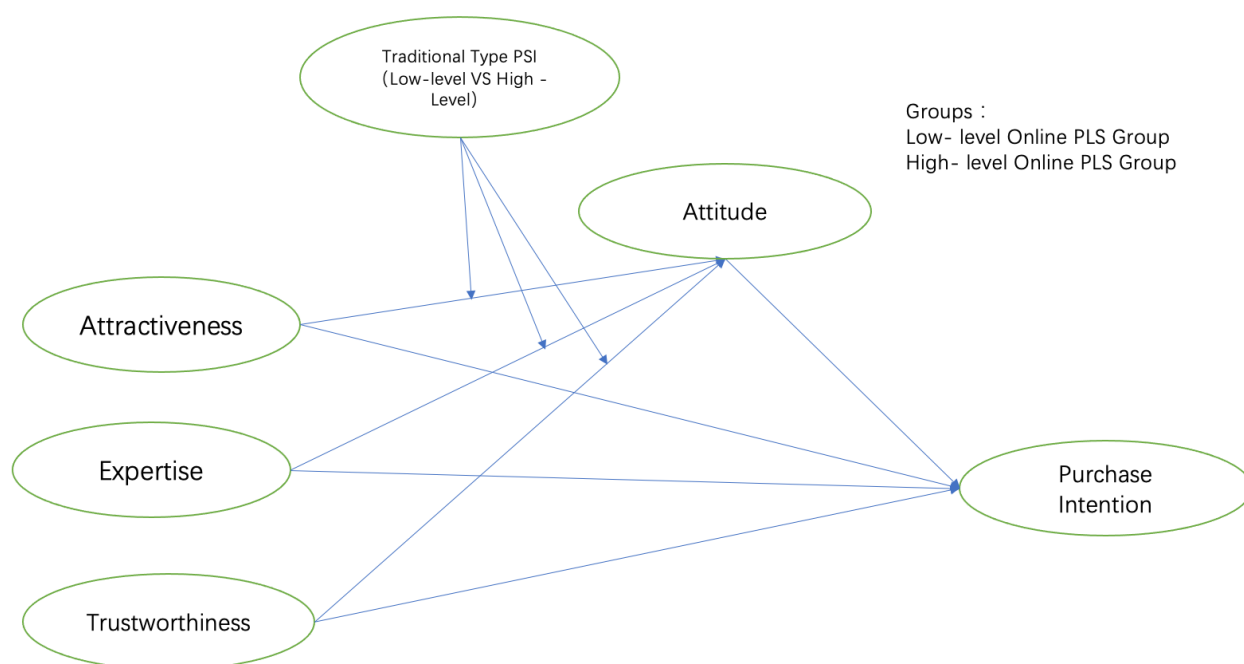


Figure 8. Conceptual Framework of Traditional type of PSI for Study 2

8.2 Hypothesis Development

Online Para-social interaction, Source model, Attitude

The widespread use of interactive social media platforms makes PSI an important factor in endorsement effectiveness. Social media contextualization and a direct sense of reality are important reasons that drive para-social interaction. The unique elements of interactive social media platforms (audio, video, and tactile stimuli) can enhance the immersive interactive experience and thus enhance the perception of social presence.

In the context of online celebrity endorsement, scholars believe that PSI is a two-way virtual interaction between the audience and the performer through interactive social media (Ballantine & Martin, 2005; Sha & Zhou, 2013; Gong & Li, 2017; Chung & Cho, 2017). Sha and Zhou (2013) believed that the temporary two-way interaction between media accounts and fans with message replies is also called para-social interaction. Although different from the one-way PSI in traditional mass media, it still belongs to the category of para-social interaction because there is no real identification or relationship between the two parties (Gong & Li, 2017). In this dissertation, it can be seen as online PSI.

The online type of PSI can strengthen the feeling and sense of social presence, thus improving consumers' perception of the authenticity of media figures (online celebrity), and ultimately affecting the PSR between consumers and online celebrity. Researchers have confirmed that celebrity endorsement effectiveness is much better in the intimate PSR model than in the strange PSR mode (Hwang & Zhang, 2018; Boerman & Van, 2019). Sundermann and Munnukka (2022) discovered that PSR could moderate the link between advertising recognition on interactive social media and purchase intention as well as brand attitude while evaluating the effect of online celebrity endorsement on advertising recognition. The empirical study of Chung and Cho (2017) also proved that fans' high levels of closeness, friendship, and understanding contribute to the positive impact of information source credibility on the endorsement effect. When consumers create a PSR with media figures via frequent interactions with them, they tend to perceive media figures as credible information sources and helpful decision-making tools (Colliander & Dahlen, 2011).

The higher the frequency of PSI between consumers and online celebrity endorsers, the more real the sense of social presence is, and the more familiar PSR will be between consumers and endorsers. According to the social influence theory, the information endorsed by online celebrity endorsers is easier to recognize and more persuasive. On the contrary, the PSI frequency is lower, the social presence is less real, the PSR is less close, and the effect of online celebrity endorsement is worse.

Based on this, we propose the following hypothesis:

H6a. Online PSI level could moderate the effect between attractiveness and attitude

H6b. Online PSI level could moderate the effect between expertise and attitude

H6c. Online PSI level could moderate the effect between trustworthiness and attitude

Traditional Para-social interaction, Source model, Attitude

Based on the characteristics of traditional mass media, traditional celebrity endorsement is a one-way information transmission process. Celebrity endorsers' hints are not targeted at specific audiences or consumers, and consumers' responses may not be received by them. Both sides are in the process of one-way communication (Hartmann & Goldhoorn, 2011). The speed and efficiency of information transfer are much lower. The two-way PSI can effectively exchange and communicate information between consumers and endorsers. Thus, the online PSI makes online celebrity endorsers more credible and attractive than traditional celebrity endorsers as information sources. Djafarova and Rushworth (2017) have proved that influencers on Instagram or YouTube have a greater impact on the brand attitudes and purchasing intentions of female consumers than traditional celebrities because they are perceived as more trustworthy and socially connected.

In this dissertation, the one-way PSI is called traditional PSI. Since the feedback between consumers and endorsers cannot be directly received by the other side, there is no effective PSI, and the social presence and PSR between the two will not change much. Thus, the traditional PSI of different frequencies will not change the strength of the effect of the source model on traditional celebrity endorsement.

Therefore, we propose the following hypothesis:

H7a. Traditional PSI level could not moderate the effect between attractiveness and attitude

H7b. Traditional PSI level could not moderate the effect between expertise and attitude

H7c. Traditional PSI level could not moderate the effect between trustworthiness and attitude

8.3 Research Design

The Study 2 also adopts the method of questionnaire survey to collect the primary data. To explore more universally whether the effectiveness of endorsements by the two different types of endorsers is affected by the level of para-social interaction, no specific endorser will be selected for this experiment. The participants in this experiment are mainly educated people aged 18-60 years old, as they have more exposure to social media platforms and knowledge about online celebrities as well as traditional celebrity endorsements (Mishra et al., 2015). A total of 958 questionnaires were distributed in this experiment, and 38 questionnaires were excluded according to the principle of completing normality or participants' unfamiliarity with the brands and endorsers. A total of 920 valid questionnaires were collected, with an efficiency rate of 96%.

Stimuli Product

Pretest & Stimuli Product: The pretest aimed to select a stimuli product that carried with utilitarian values. The stimuli product could help us design a situation to let respondents to choose different type of endorser. Utilitarian value (i.e., economic, rational, functional, and physical values) is an important goal for consumers in selecting products (Lai, 1995), and is the basic aspect to be taken into consideration when testing product involvement. Pretest for selecting product categories was measured by using the method set by Mittal and Lee (1989). Detailed questions are listed in Table 26. Responses were asked to fill in the blanks in the form of multiple choices. 14 respondents (8 females and 6 males, aged 16 to 50 years) were enrolled in the pretest. Mobile phones, sneakers and bottled mineral water were pretested. The three products are necessities for public consumption and are usually consumed in the public circumstances.

Table 26. Questionnaire on utilitarian value

	Questions
Product Utilitarian Value (Mittal & Lee, 1989)	Using ____ would be beneficial. ____ is basically a useful thing. ____ makes everyday life easier

Based on the data reflecting the utilitarian value of products, the results showed that mobile phones were always considered as the most utilitarian value by consumers in 71.43%, 85.71% and 100.00% in terms of Beneficial, Useful and Easier aspects. Therefore, we will use the “mobile phone” as the stimulus product. Virtual brands for the product were designed as stimuli to avoid the effect of brand image and brand identity.

Procedure of main test

The overall experimental study was similar with study 1, the overall experimental study was implemented by means of the Wenjuanxing. After a short background introduction, the survey began by asking all participants to indicate their gender, age, and education level, and then participants need to answer the following two questions to select eligible subjects:

- 1) Whether to use interactive social media platforms (1 = yes; 2 = no)
- 2) Whether know the online/traditional celebrity and celebrity endorsements. (1 = yes; 2 = no)

Participants who answer “no” will be stopped from answering the question. Thus, all the remained data could represent the validity answers from which respondents are clearly understand all the questions we made. Then participants were required to watch the picture of the stimuli product for at least 30 s in duration. The picture was presented with a mobile phone which with a virtual brand to avoid the perceived brand image of participants. Participants were provided the following instructions: “Please take a

moment to think about the product in the picture and think about the following situation”:

1) If this product needs an endorser, who do you think is a suitable celebrity to endorse the product, please write down his/her name.

2) Where do you think the endorsement should appear: 1= traditional mass media; 2= online interactive social media platform.

To help participants distinguish between the types of celebrity endorsers and forms of endorsements they wrote, we will determine what type of endorser a person is based on what he/she is known for or became famous for an initial stage. If the person is an actor/singer or is known for his/her achievements in a certain field, he/she is the traditional celebrity. If the person has a large number of fans on interactive social media platforms because of his or her unique character, attractive physical appearance and personality, or becomes popular on interactive social media platforms due to a certain event, then he/she is an online celebrity.

Those who choose “Mass Media” with traditional celebrity’ s name will receive the questionnaire related to Traditional PSI, while those who choose “online interactive social media platform” with online celebrity’ s name will receive another.

8.4 Measurements

All the measurement were asked to choose the agreement level based on their perception of the endorser’s characteristics. 15 items adapted from Ohanian (1900) measured the perceptions of endorsers’ source characteristics: attractiveness (5 items), expertise (5 items), trustworthiness (5 items). and 3 items adapted from Primack et al. (2017) measured the perceptions of PSI level. They were asked to indicate their agreement with the following statements (1 = strongly disagree, 5 = strongly agree).

To measure the attitudes towards the brand and purchase intention, “Attitude” based on Spears and Singh (2004) with 5 items and “Purchase Intention” based on Spears and Singh (2004), with 4 items These items are the same in study 1. All the items were measured with Likert five-point scale from 1 to 5. “1” is represented as “strongly disagree” and “5” is represented as “strongly agree”. (See Table 27).

Table 27. Measurement items for variables in Study 2

Variables	Items	Measurement Items
Attractiveness (Ohanian, 1990)	Attrac1	1. I think online celebrity endorser is attractive/Unattractive:
	Attrac2	2. I think online celebrity endorser is beautiful/Ugly
	Attrac3	3. I think online celebrity endorser is classy/Not classy
	Attrac4	4. I think online celebrity endorser is elegant/Plain
	Attrac5	5. I think online celebrity endorser is sexy/ Not Sexy
Expertise (Ohanian, 1990)	Ex1	1. I think online celebrity endorser is an expert
	Ex2	2. I think online celebrity endorser is experienced
	Ex3	3. I think online celebrity endorser is knowledgeable
	Ex4	4. I think online celebrity endorser is qualified
	Ex5	5. I think online celebrity endorser is skilled
Trustworthiness (Ohanian, 1990)	Trust1	1. I think online celebrity endorser is dependable
	Trust2	2. I think online celebrity endorser is honest
	Trust3	3. I think online celebrity endorser is reliable
	Trust4	4. I think online celebrity endorser is sincere
	Trsut5	5. I think online celebrity endorser is trustworthy
Para-social Interaction (Primack et al., 2017)	Int1	Online type: I think this online celebrity endorser often interacts with fans/consumers Traditional type: I think this traditional celebrity endorser often interacts with fans/consumers in real life (say hi or take photo with fans)
	Int2	Online type: I think this online celebrity endorser use variable social media (social platform, video website, live platform) to communicate with fans/consumers Traditional type: I think this traditional celebrity, being as endorser, often how up on mass media (TV, radio, etc.)
	Int3	Online type: I think online celebrity endorser often interacts with fans/consumers in the new media platform using pictures, text, music, video or any other media forms

		Traditional type: I think this traditional celebrity endorser often transmit information through mass media (poster campaign, TV ads, variety show, etc.)
Attitude towards Brand/product (Spears & Singh, 2004)	Att1	1. I think the product is appealing
	Att2	2. I think the product is good
	Att3	3. I think the product is pleasant
	Att4	4. I think the product is favorable
	Att5	5. I think the product is likable
Purchase Intention (Spears & Singh, 2004)	PI1	1. I am definitely going to buy the product
	PI2	2. I am definitely intending to buy
	PI3	3. I am having a high purchase interest
	PI4	4. I am probably buying it

8.5 Data Collection

The questionnaire was distributed by WJX randomly to the targeted respondents on June 20th, 2022. In order to speed up the process, we used the express service of the platform. After 24 hours of questionnaire distribution started, we eliminated all the unqualified questionnaires and finally got 920 valid samples. The sample demographics are shown in Table 16. Among 920 respondents, 347 respondents were male and 573 were female. As the survey was conducted online, most of the respondents' age range was between 20 and 40 years old. In fact, there were 839 respondents in that range. There was more than 90% of the respondents have college degrees or above. (Table 28).

Table 28. Demographics of sample

	Categories	Frequency	Percent (%)
Gender	Male	347	37.7
	Female	573	62.3
Age	under 20	46	5.0
	20-30	549	59.7
	31-40	290	31.5
	41-50	26	2.8
	over 50	9	1.0
Education Level	Primary School	0	0.0
	Middle School	10	1.1
	High School	79	8.6
	College	693	75.3
	Graduates	138	15.0

8.6 Data Analysis

The analysis results show (Table 29) that the load of items is between 0.727 and 0.797, all of which are more than 0.7. All the items' VIF is smaller than 10, and they all related to 1 (the biggest VIF is 2.139). This shows that there is no multicollinearity problem in this model.

The Cronbach α coefficient of each dimension ranged from 0.808-0.882, all exceeding 0.8. All CR values ranged from 0.811-0.882, all of which were more than 0.8. Each AVE value ranges from 0.570 to 0.611, all exceeding 0.5. In conclusion, the questionnaire used in this study has good reliability and validity, which can be analyzed in the next step.

Table 29. Reliability and validity analysis

Factor	Item	St. Loading	VIF	Cronbach's α	CR	AVE
Attractiveness	Attrac1	0.727	1.819	0.869	0.869	0.570
	Attrac2	0.791	2.103			
	Attrac3	0.764	1.979			
	Attrac4	0.730	1.828			
	Attrac5	0.765	1.976			
Expertise	Ex1	0.781	2.084	0.871	0.873	0.579
	Ex2	0.727	1.821			
	Ex3	0.744	1.893			
	Ex4	0.788	2.115			
	Ex5	0.755	1.952			
Trustworthiness	Trust1	0.784	2.103	0.882	0.882	0.600
	Trust2	0.790	2.139			
	Trust3	0.767	2.012			
	Trust4	0.776	2.077			
	Trust5	0.753	1.966			
Attitude	Att1	0.736	1.827	0.870	0.871	0.574
	Att2	0.763	2			
	Att3	0.769	1.984			
	Att4	0.758	1.944			
	Att5	0.762	1.975			
PI	PI1	0.797	2.106	0.863	0.863	0.611
	PI2	0.793	2.097			
	PI3	0.757	1.979			
	PI4	0.782	2.035			
PSI	Int1	0.770	1.777	0.808	0.811	0.588
	Int2	0.796	1.839			
	Int3	0.734	1.717			

As for the discriminant validity, the results showed (Table 30) that the correlation coefficients of Attractiveness, Expertise and Trustworthiness with Attitude ranged from 0.199-0.288, and the correlation coefficients of Purchase intention ranged from 0.232-0.318. The correlation coefficient between Attitude and Purchase intention is 0.377. In addition, the correlation coefficient between any two dimensions is smaller than the square root of AVE (diagonal bold number) of each dimension, indicating that there is sufficient discriminative validity between different dimensions, and concepts can be well distinguished from each other.

Table 30. Means, standard deviations, correlations and discriminant validity

Variable	1	2	3	4	5	6
1.Attractiveness	0.755					
2.Expertise	0.004	0.761				
3.Trustworthiness	0.014	0.005	0.774			
4.Attitude	0.288**	0.219**	0.199**	0.758		
5.PI	0.318**	0.242**	0.232**	0.377**	0.782	
6.PSI	0.251**	0.046	0.127**	0.059	0.229**	0.767
M	3.064	2.951	3.061	3.032	3.017	2.913
SD	0.825	0.842	0.835	0.822	0.852	0.791

Note: *p<0.05, **p<0.01, ***p<0.001, two-tailed; Square-root of the AVEs are reported in bold along the diagonal of the correlation of constructs.

The results of the model fit in Study 2 showed (Table 31) that the model $\chi^2=305.162$, $df=242$, $RMSEA=0.017$, $GFI=0.973$, $AGFI=0.966$, $RFI=0.968$, $NFI=0.972$, $IFI=0.994$, $TLI=0.993$, $CFI=0.994$, all values are within the standard range, therefore Study2' s model fits well (Table 31).

Table 31. Model fit of Study 2

Index	χ^2	df	χ^2/df	RMSEA	GFI	AGFI	RFI	NFI	IFI	TLI	CFI
Critical value			<3	<0.08	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9
Est.	305.162	242	1.261	0.017	0.973	0.966	0.968	0.972	0.994	0.993	0.994

8.7 Hypothesis Test

8.7.1 Direct Effect

Firstly, the path coefficient is tested, and the results can be showed as followings (Table 32, Figure 9):

From the result, for the “Expertise”, it can have significantly positive effects on both Attitude ($\beta=0.246$, $Z=6.861$, $P<0.001$) and PI ($\beta=0.214$, $Z=6.051$, $P<0.001$). As for the “Trustworthiness”, it also can positively make significant effect on Attitude ($\beta=0.220$, $Z=6.223$, $P<0.001$) as well as PI ($\beta=0.206$, $Z=5.917$, $P<0.001$). As for the “Attractiveness”, there is a positively direct impact from Attractiveness to Attitude

($\beta=0.326$, $Z=8.738$, $P<0.001$) and Attractiveness to Purchase Intention (PI) ($\beta=0.284$, $Z=7.548$, $P<0.001$). As for the relationship between attitude and Purchase intention, the path coefficient is 0.239 ($\beta=0.239$, $Z=6.020$, $P<0.001$), which means that attitude can positively make an influence on consumers' purchase intention.

Among these three dependent variables, Attractiveness is still the greatest impact on consumers, with the effect being significantly greater than both Expertise and Trustworthiness in terms of consumer attitudes and purchasing intention.

Table 32. Direct path analysis

Path	Path Coefficients	Z	P Values	Hypothesis	Result
Attractiveness -> Attitude	0.326	8.738	<0.001	H3a	Supported
Attractiveness -> Purchase Intention	0.284	7.548	<0.001	H3b	Supported
Expertise -> Attitude	0.246	6.861	<0.001	H1a	Supported
Expertise -> Purchase Intention	0.214	6.051	<0.001	H1b	Supported
Trustworthiness -> Attitude	0.220	6.223	<0.001	H2a	Supported
Trustworthiness -> Purchase Intention	0.206	5.917	<0.001	H2b	Supported
Attitude -> Purchase Intention	0.239	6.020	<0.001	H4	Supported

8.7.2 Mediation Effect

AMOS was used to perform 5000 Bootstrap analyses and a 95% confidence interval (CI) of Bias-corrected was calculated. As shown in Table 33, it seems that all the paths can go through from independent variables to attitude and then make positive significant effect on Purchase intention. Among them, Attitude have the strongest mediator effect on the relationship between Attractiveness and Purchase Intention ($\beta=0.078$, 95% CI= [0.053, 0.107]). Then followed by making mediator effect on the path between Expertise to Purchase Intention ($\beta=0.059$, 95% CI= [0.038, 0.086]). Finally, the path with the least mediator impact is from Trustworthiness and Purchase Intention ($\beta=0.053$, 95% CI= [0.032, 0.078]).

Table 33. Mediation analysis

Mediation path	β	Bootstrap				Results
		SE	95% CI	p		
Attractiveness → Attitude → PI	0.078	0.014	0.053	0.107	<0.001	Accepted
Expertise → Attitude → PI	0.059	0.012	0.038	0.086	<0.001	Accepted

Trustworthiness →	0.053	0.010	0.032	0.078	<0.001	Accepted
Attitude → PI						

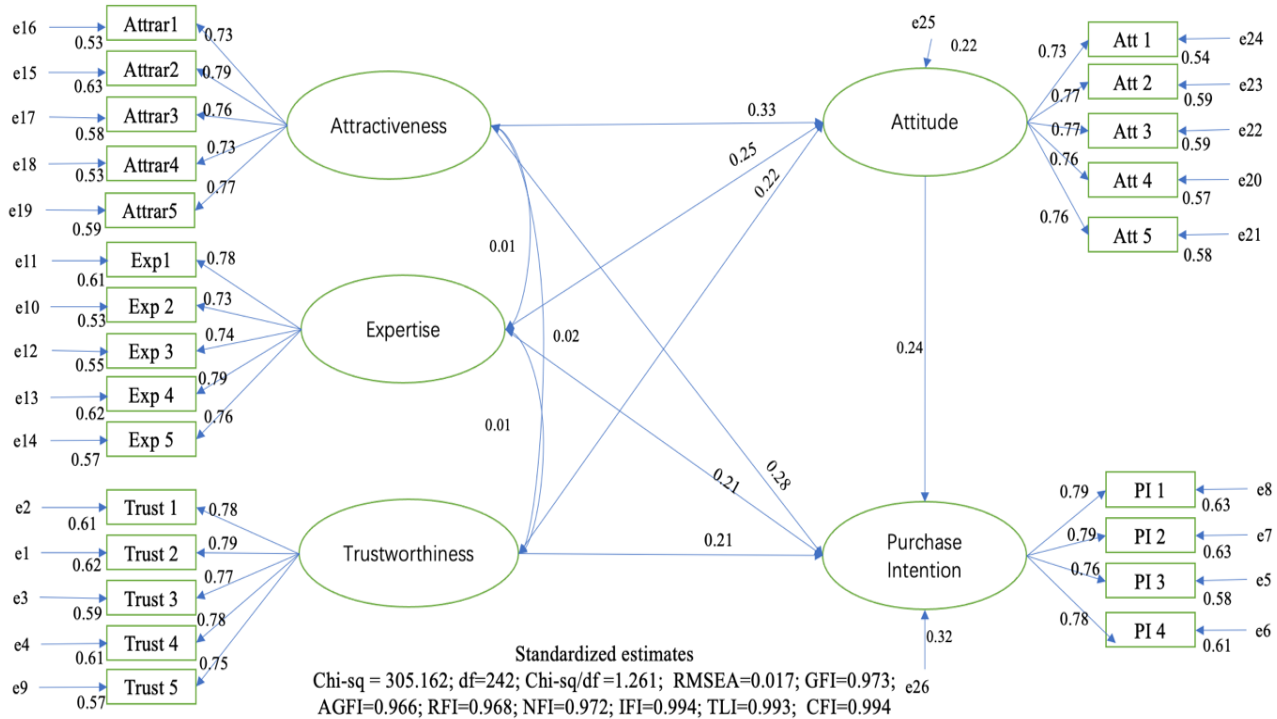


Figure 9. Path Loading & Structure Equation Model of Study 2

8.7.3 Moderation Effect

The data were divided into four groups by PSI Type (Traditional vs. Online) and PSI Level (Low vs. High). AMOS was used for multi-group analysis. When expressing thoughts or perceptions, respondents frequently adopt a neutral (middle) stance. It's difficult to detect the difference from the continuous latent variables. Thus, by employing the *median split*, we can more effectively divide them into two groups with distinct goals.

Given that the proposed moderators, traditional and online PSI, were latent variables, it was essential to convert the data into categorical variables. The reason is that the answers on each type of PSI from respondents are their agreement level for the perception of the endorsers' PSI which cannot directly represent the performance level of the endorsers' PSI. Therefore, it is necessary to translate the agreement level into PSI levels, in order to better test the moderation effect of PSI, the data were divided into four groups: High-level traditional PSI group vs. Low-Level traditional PSI group; High-level online PSI group vs. Low-level online PSI group.

After the data were divided into four groups, firstly, according to the hypothesis, we should test whether the three moderated paths are different among the four groups, that is, whether the three paths (Attractiveness → Attitude, Expertise → Attitude and

Trustworthiness → Attitude) could be moderated at the same time, the analyzing process is shown in Figure 10.

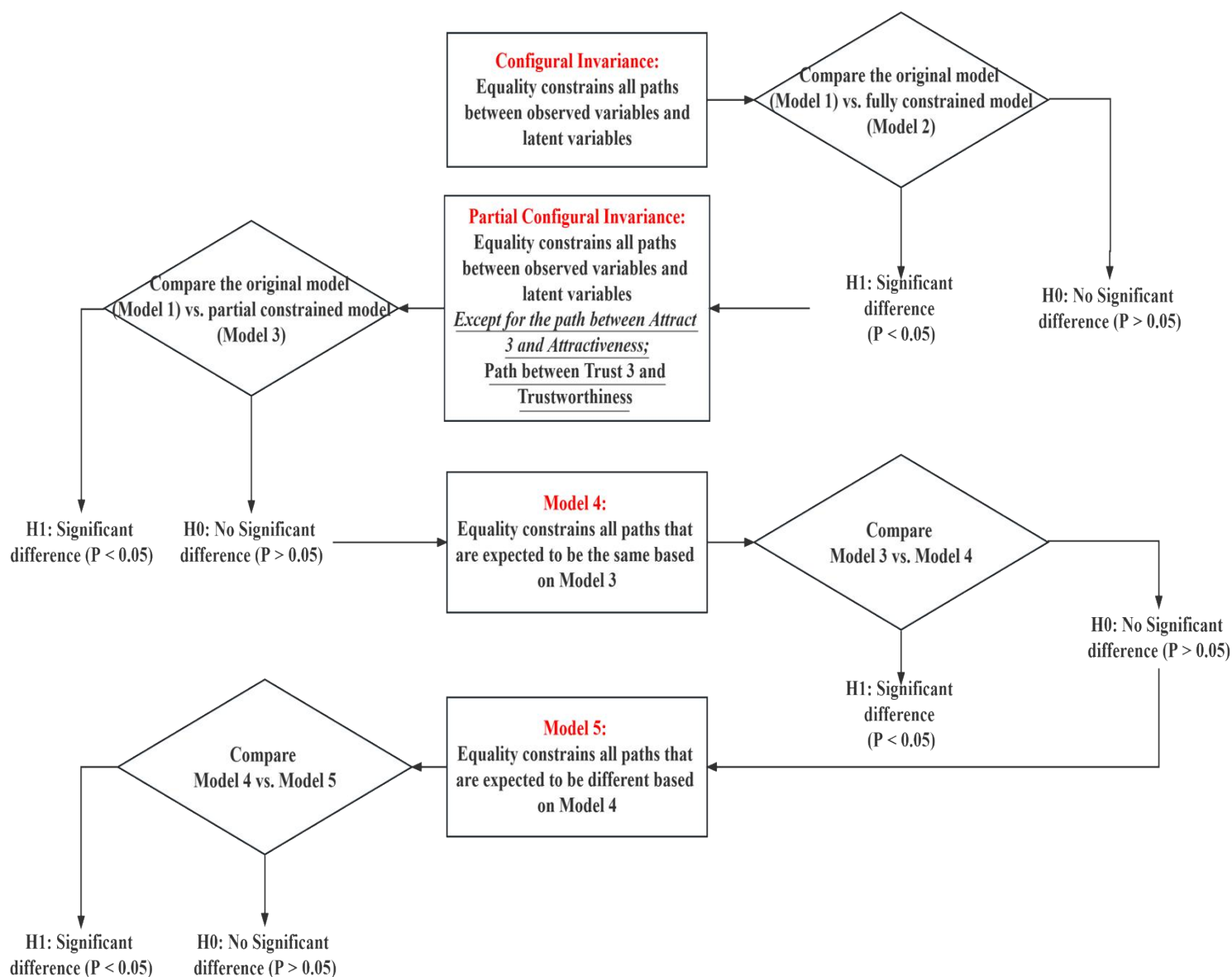


Figure 10. The analyzing process of moderation effect in general

First of all, the multigroup confirmatory factor analysis is required for testing measurement invariance (Steenkamp & Baumgartner, 1998). Measurement Invariance can show whether the scale is invariance across groups of measurements (the consistency of the relationship between observed variables and latent variables in different groups). Thus, the Configural invariance analysis needs to be tested. Configural Invariance is a prerequisite for other Invariance tests, and only when all the factor structure is the same in different groups, the other test can be followed.

All fitting indexes of the original model (Model 1, Figure 9) within a reasonable range ($\chi^2=986.436$, $df=968$, $RMSEA = 0.005$, $GFI = 0.921$, $AGFI = 0.902$, $RFI = 0.906$, $NFI = 0.917$, $IFI = 0.998$, $TLI = 0.998$, $CFI = 0.998$). Based on Model 1, we equality constrain all paths between observed variables and latent variables (Model 2, Figure 11). The same factor structure should exist between Model 1 and Model 2. Thus, we assume the following Hypothesis:

H0: There is no significant difference between Model 1 and Model 2.

H1: There is a significant difference between Model 1 and Model 2.

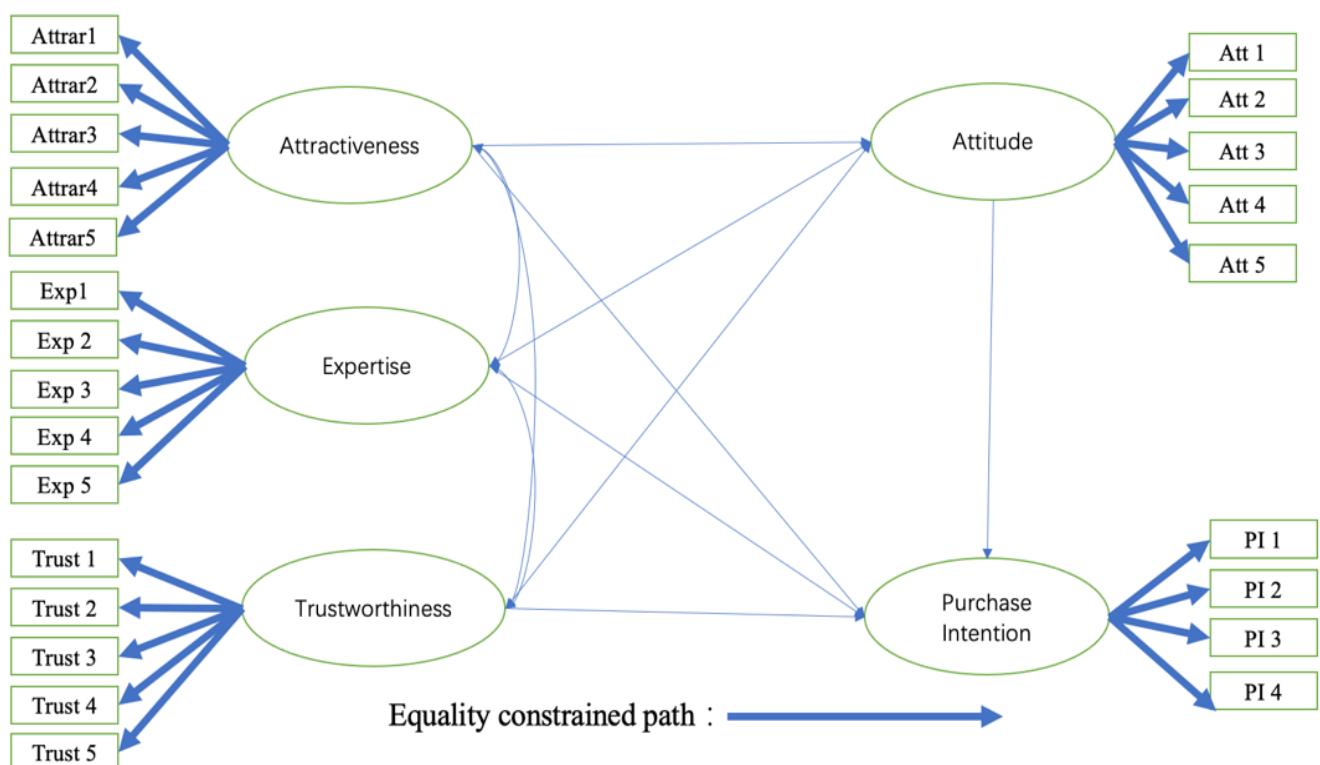


Figure 11. The constrained path of Model 2

As can be seen in Table 34, there was a significant difference between Model 2 and Model 1, $\Delta\chi^2 (df)=86.251(57)$, $p=0.007$. Thus, H1 has been proved. It indicates that paths between groups are different.

Table 34. Model fit of constraint models

Model	χ^2	df	χ^2/df	RMSEA	GFI	AGFI	RFI	NFI	IFI	TLI	CFI
Model 1	986.436	968	1.019	0.005	0.921	0.902	0.906	0.917	0.998	0.998	0.998
Model 2	1072.687	1025	1.047	0.007	0.914	0.899	0.903	0.91	0.996	0.995	0.996
Comparison		$\Delta\chi^2(df)$		P-Value							
Model 2	Model 1	86.251(57)		0.007							

Therefore, the Partial Configural Invariance should be tested. Based on Model 1, we equality constrain on all paths between observed variables and laten variables, except the path between Attract 3 and Attractiveness; and the path between Trust 3 and Trustworthiness (Model 3, Figure 12). We tested the model fit of Model 3 and compare the Model 1 and Model 3, we expected that the same factor structure should exist between Model 1 and Mode 3. Thus, we assume the following Hypothesis:

H0: There is no significant difference between Model 1 and Model 3.

H1: There is a significant difference between Model 1 and Model 3.

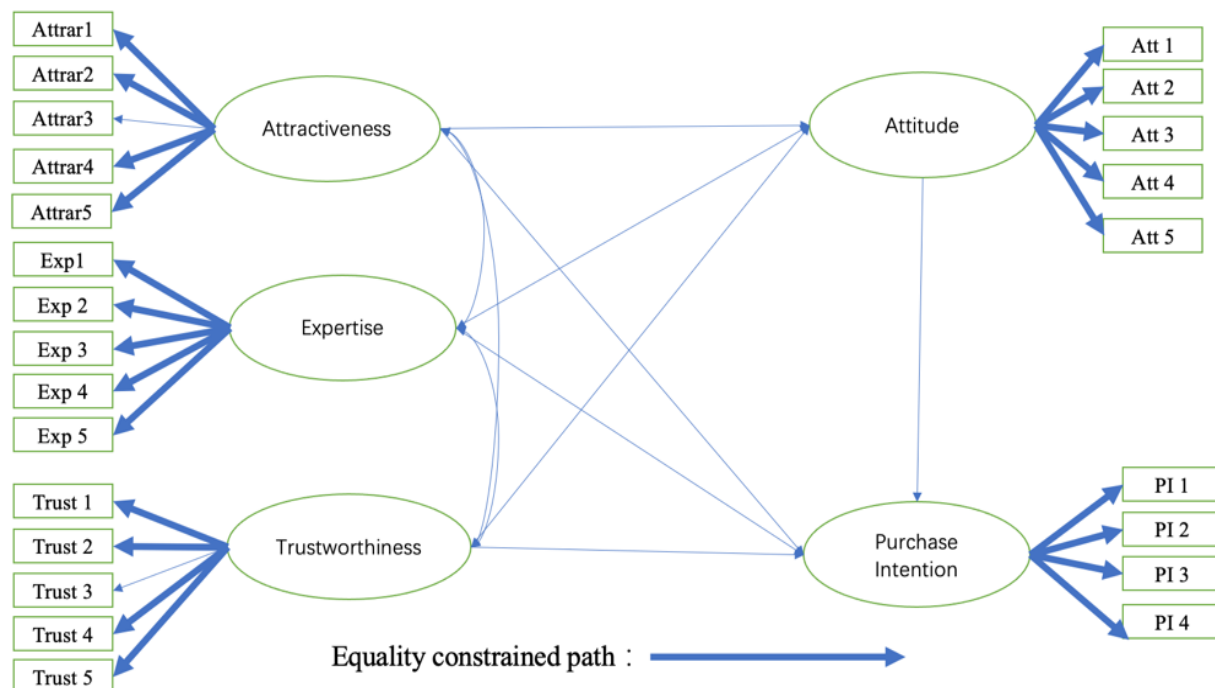


Figure 12. The constrained path of Model 3, Model 7 and Model 13

As can be seen in Table 35, there was no significant difference between Model 3 and Model 1, $\Delta\chi^2(df)=64.479(51)$, $p=0.097$. Thus, H0 has been proved. It indicates that the constrained paths are not significantly different between groups.

Table 35. Model fit of constraint models

Model	χ^2	df	χ^2/df	RMSEA	GFI	AGFI	RFI	NFI	IFI	TLI	CFI
Model 1	986.436	968	1.019	0.005	0.921	0.902	0.906	0.917	0.998	0.998	0.998
Model 3	1050.915	1019	1.031	0.006	0.916	0.901	0.904	0.912	0.997	0.997	0.997
Comparison		$\Delta\chi^2(df)$		P-Value							
Model 3	Model 1	64.479(51)		0.097							

Later, the structural coefficient analysis among multiple groups was carried out. According to the moderation hypothesis, the “PSI” could only moderate the paths between the source model and attitude, the path related to the Purchase intention should be the same in different groups. Therefore, we equality constrain all paths that expected

to be the same (Model 4, Figure 13). We tested the model fit and compare the differences between Model 3 and Model 4. Thus, we assume the following Hypothesis:

H0: There is no significant difference between Model 3 and Model 4.

H1: There is a significant difference between Model 3 and Model 4.

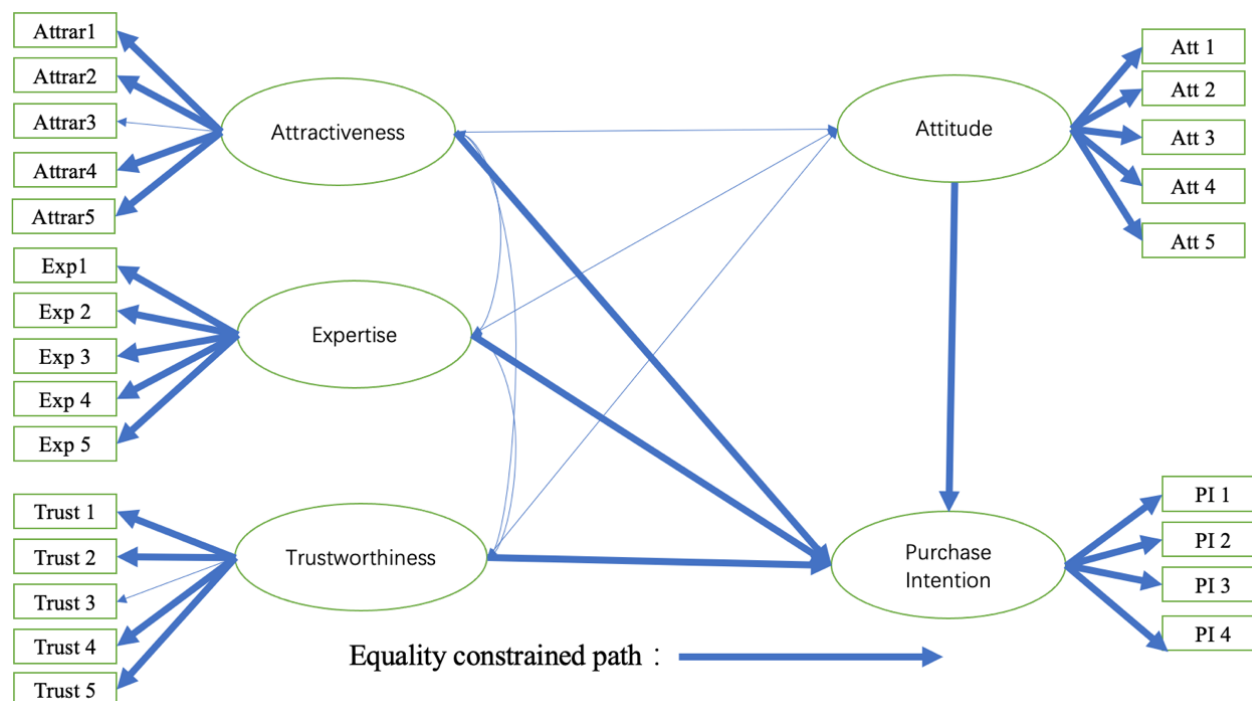


Figure 13. The constrained path of Model 4, Model 8 and Model 14

As can be seen in Table 36, there was no significant difference between Model 3 and Model 4, $\Delta\chi^2(df)=4.757(12)$, $p=0.966$. Thus, H0 has been proved, indicating that there was no groups difference between the above paths.

Table 36. Model fit of constraint models

Model	χ^2	df	χ^2/df	RMSEA	GFI	AGFI	RFI	NFI	IFI	TLI	CFI
Model 3	1050.915	1019	1.031	0.006	0.916	0.901	0.904	0.912	0.997	0.997	0.997
Model 4	1055.672	1031	1.024	0.005	0.915	0.902	0.905	0.911	0.998	0.998	0.998
Comparison		$\Delta\chi^2(df)$		P-Value							
Model 4	Model 3	4.757(12)		0.966							

Finally, we should test the path which should be different due to the “PSI” could moderate those paths between the source model and attitude. Therefore, we equality constrain all the moderated path at the same time (Model 5, Figure 14) on the basis of Model 4, there should be a significant difference between the Model 5 and Model 4. Thus, we assume the following Hypothesis:

H0: There is no significant difference between Model 4 and Model 5.

H1: There is a significant difference between Model 4 and Model 5.

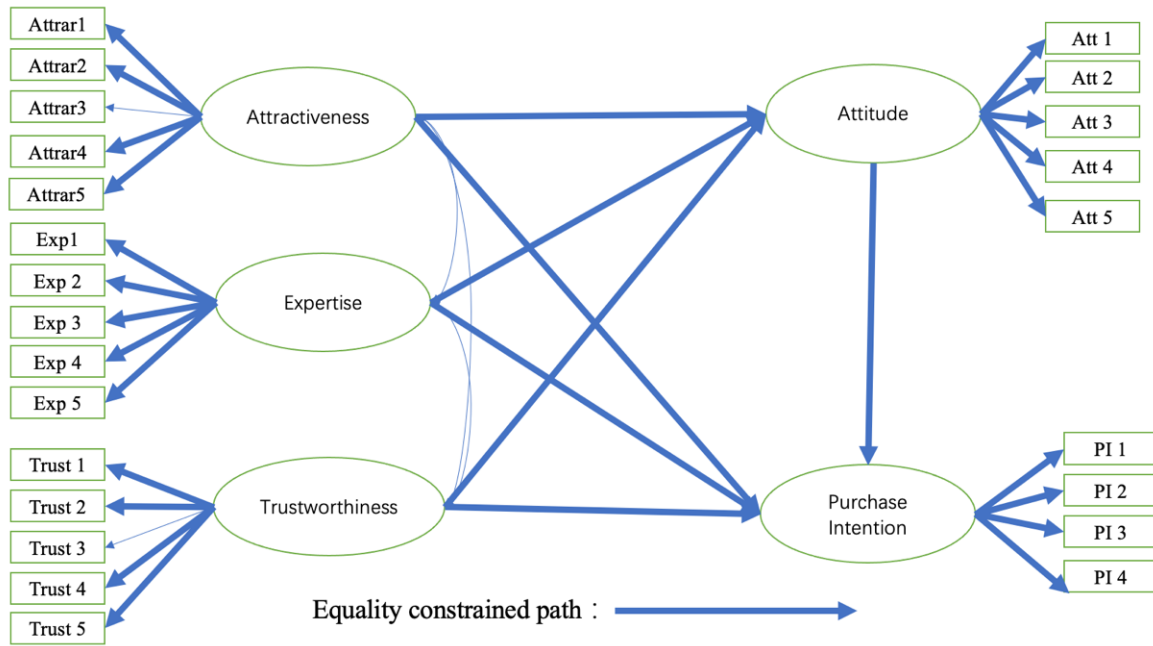


Figure 14. The constrained path of Model 5

As can be seen in Table 37, there was a significant difference between Model 4 and Model 5, $\Delta\chi^2(df)=40.515(9)$, $p<0.001$. Thus, H1 has been proved. The results of Model 5 and Model 4 show that all the moderation effects are significant at the same time, indicating the moderation effects is supported.

Table 37. Model fit of constraint models

Model	χ^2	df	χ^2/df	RMSEA	GFI	AGFI	RFI	NFI	IFI	TLI	CFI
Model 4	1055.672	1031	1.024	0.005	0.915	0.902	0.905	0.911	0.998	0.998	0.998
Model 5	1096.187	1040	1.054	0.008	0.912	0.899	0.902	0.908	0.995	0.994	0.995
Comparison		$\Delta\chi^2(df)$		P-Value							
Model 5	Model 4	40.515(9)		0.001							

However, it remains unclear whether all three pathways (between source model and attitude) are moderated at the same time, or whether some pathways are moderated and some are not. In addition, after the analysis of the four groups at the same time, it is not clear whether there are differences between the four groups in pairs or only between some groups. These contents still need further and more specific analysis.

In conclusion, the data should be divided into two groups (traditional PSI, $n = 460$ & Online PSI, $n = 460$) from the perspective of PSI Type, and then the PSI Level will be grouped and tested in the Low-level PSI and High-level PSI, ($N_{\text{Traditional-High}} = 233$; $N_{\text{Traditional-Low}} = 227$; $N_{\text{online-High}} = 234$; $N_{\text{online-Low}} = 226$) so as to clarify the group and path of moderation effect.

Online PSI

A multi-group analysis was performed between the Low-level group and High-level group under the Online PSI. According to the hypothesis, we should test whether the three moderated paths (Attractiveness → Attitude, Expertise → Attitude and Trustworthiness → Attitude) between the two groups are independently different, the analyzing process is shown in Figure 15.

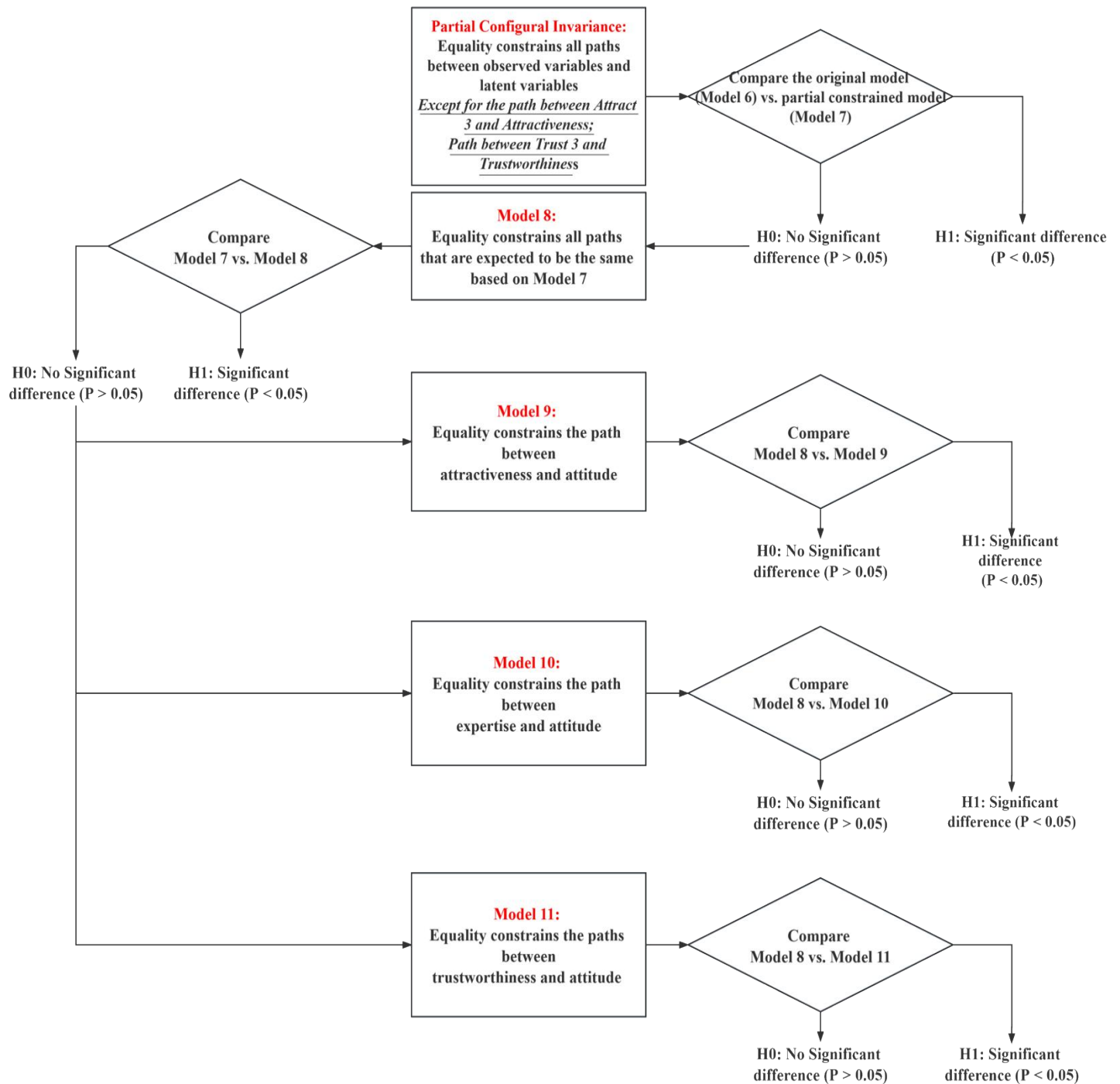


Figure 15. The analyzing process of moderation effect in online PSI

First of all, all fitting indexes of the original model of online PSI group (Model 6, Table 38) within a reasonable range. And Model 7 (Figure 12) is a Partial configural invariance model, all paths between observed variables and latent variables are equality constrained, only the path between Attract 3 and Attractiveness and the path between Trust 3 and Trustworthiness are excepted. We tested the model fit and the same factor structure should exist between Model 6 and Mode 7. Thus, we assume the following Hypothesis:

H0: There is no significant difference between Model 6 and Model 7.

H1: There is a significant difference between Model 6 and Model 7.

As can be seen in Table 38, there was no significant difference between Model 6 and Model 7, $\Delta\chi^2(df)=24.724(17)$, $p=0.101$. Thus, H0 has been proved. It indicates that the constrained paths are not significantly different between high-level group and low-level group.

Table 38. Model fit of constraint models in online group

Model	χ^2	df	χ^2/df	RMSEA	GFI	AGFI	RFI	NFI	IFI	TLI	CFI
Model 6	491.437	484	1.015	0.006	0.92	0.901	0.909	0.921	0.999	0.998	0.999
Model 7	516.161	501	1.03	0.008	0.917	0.901	0.908	0.917	0.997	0.997	0.997
Comparison		$\Delta\chi^2(df)$		P-Value							
Model 7	Model 6	24.724(17)		0.101							

According to the moderation hypothesis, the “online PSI” could only moderate the paths between the source model and attitude, the path related to the Purchase intention should be the same in different groups. Therefore, We equality constrain all paths that expected to be the same (Model 8, Figure 13). We tested the model fit and compare the differences between Model 7 and Mode 8. And we assume the following Hypothesis:

H0: There is no significant difference between Model 7 and Mode 8.

H1: There is a significant difference between Model 7 and Mode 8.

As can be seen in Table 39, there was no significant difference between Model 7 and Model 8, $\Delta\chi^2(df)=2.302(4)$, $p=0.680$. Thus, H0 has been proved, indicating that there was no groups difference between high-level group and low-level group in Online PSI.

Table 39. Model fit of constraint models in online group

Model	χ^2	df	χ^2/df	RMSEA	GFI	AGFI	RFI	NFI	IFI	TLI	CFI
Model 7	516.161	501	1.03	0.008	0.917	0.901	0.908	0.917	0.997	0.997	0.997
Model 8	518.464	505	1.027	0.008	0.917	0.901	0.908	0.916	0.998	0.997	0.998
Comparison		$\Delta\chi^2(df)$		P-Value							
Model 8	Model 7	2.302 (4)		0.68							

Finally, due to the “online PSI” could moderate the paths between the three dimensions of the source model and attitude, thus, we constrained each of the moderate path separately on the basis of Model 8. As it shows in Figure 16.

Model 9: Based on the Model 8, equality constrains the path “Attractiveness →Attitude”

Model 10: Based on the Model 8, equality constrains the path “Expertise →Attitude”

Model 11: Based on the Model 8, equality constrains the path “Trustworthiness →Attitude”

Each of the constrained moderation path model should have a significant difference with Model 8. Thus, we assume the following Hypothesis:

H0: There is no significant difference between Model 8 and Model 9; Model 8 and Model 10; Model 8 and Model 11.

H1: There is a significant difference between Model 8 and Model 9; Model 8 and Model 10; Model 8 and Model 11.

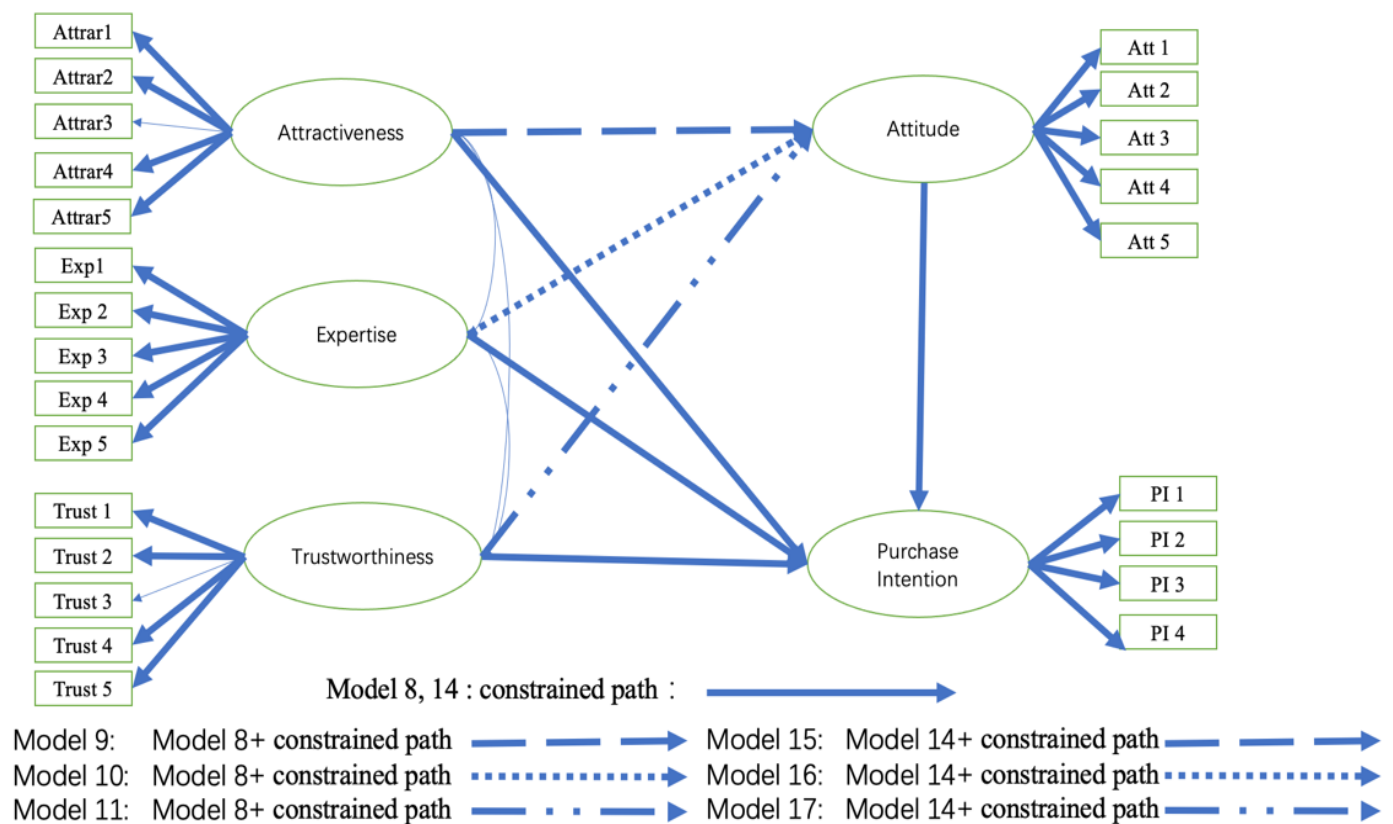


Figure 16. The constrained path of Model 9,10,11,15,16,17

As can be seen in Table 40:

There was a significant difference between Model 9 and Model 8, $\Delta\chi^2(df)=11.199(1)$, $p=0.001$.

There was a significant difference between Model 10 and Model 8, $\Delta\chi^2(df)=10.354(1)$, $p=0.001$.

There was a significant difference between Model 11 and Model 8, $\Delta\chi^2(df)=8.335(1)$, $p=0.004$.

Thus, H1 has been proved. Therefore, there is a moderating effect on the Paths of “Attractiveness →Attitude”; “Expertise →Attitude”; “Trustworthiness →Attitude”.

Table 40. Model fit of constraint models in online group

Model	χ^2	df	χ^2/df	RMSEA	GFI	AGFI	RFI	NFI	IFI	TLI	CFI
Model 8	518.464	505	1.027	0.008	0.917	0.901	0.908	0.916	0.998	0.997	0.998
Model 9	529.663	506	1.047	0.01	0.916	0.9	0.907	0.914	0.996	0.995	0.996
Model 10	528.817	506	1.045	0.01	0.915	0.899	0.907	0.915	0.996	0.996	0.996
Model 11	526.798	506	1.041	0.009	0.915	0.899	0.907	0.915	0.996	0.996	0.996
Comparison				$\Delta\chi^2(df)$				P-Value			
Model 9	Model 8			11.199(1)				0.001			
Model 10	Model 8			10.354(1)				0.001			
Model 11	Model 8			8.335(1)				0.001			

The path coefficient results in the Online group are shown in the following Table 41. According to the coefficient size and test results, The path coefficients of Attractiveness → Attitude, Expertise → Attitude and Trustworthiness → Attitude in the High-level PSI group were significantly higher than those in the Low-level PSI group.

Therefore, Online PSI has a significant moderation effect in Online Group, Providing support for H6a, H6b, H6c.

Table 41. Multi-Group analysis of online group

Path			PSI Level		$\Delta\chi^2(df)$	Result
			Low	High		
Attractiveness	→	Attitude	0.258***	0.523***	11.199(1) **	Supported
Expertise	→	Attitude	0.164*	0.434***	10.354(1) **	Supported
Trustworthiness	→	Attitude	0.170*	0.405***	8.335(1) **	Supported
Attractiveness	→	PI	0.260***	0.325***		
Expertise	→	PI	0.207**	0.255**		
Trustworthiness	→	PI	0.186**	0.223**		
Attitude	→	PI	0.214**	0.278*		

Note: *p<0.05, **p<0.01, ***p<0.001, two-tailed.

Traditional PSI

A multi-group analysis was performed between the Low-level group and High-level group under the Traditional PSI. According to the hypothesis, we should test whether the three moderated paths (Attractiveness → Attitude, Expertise → Attitude and Trustworthiness → Attitude) between the two groups are independently different, the analyzing process is shown in Figure 17.

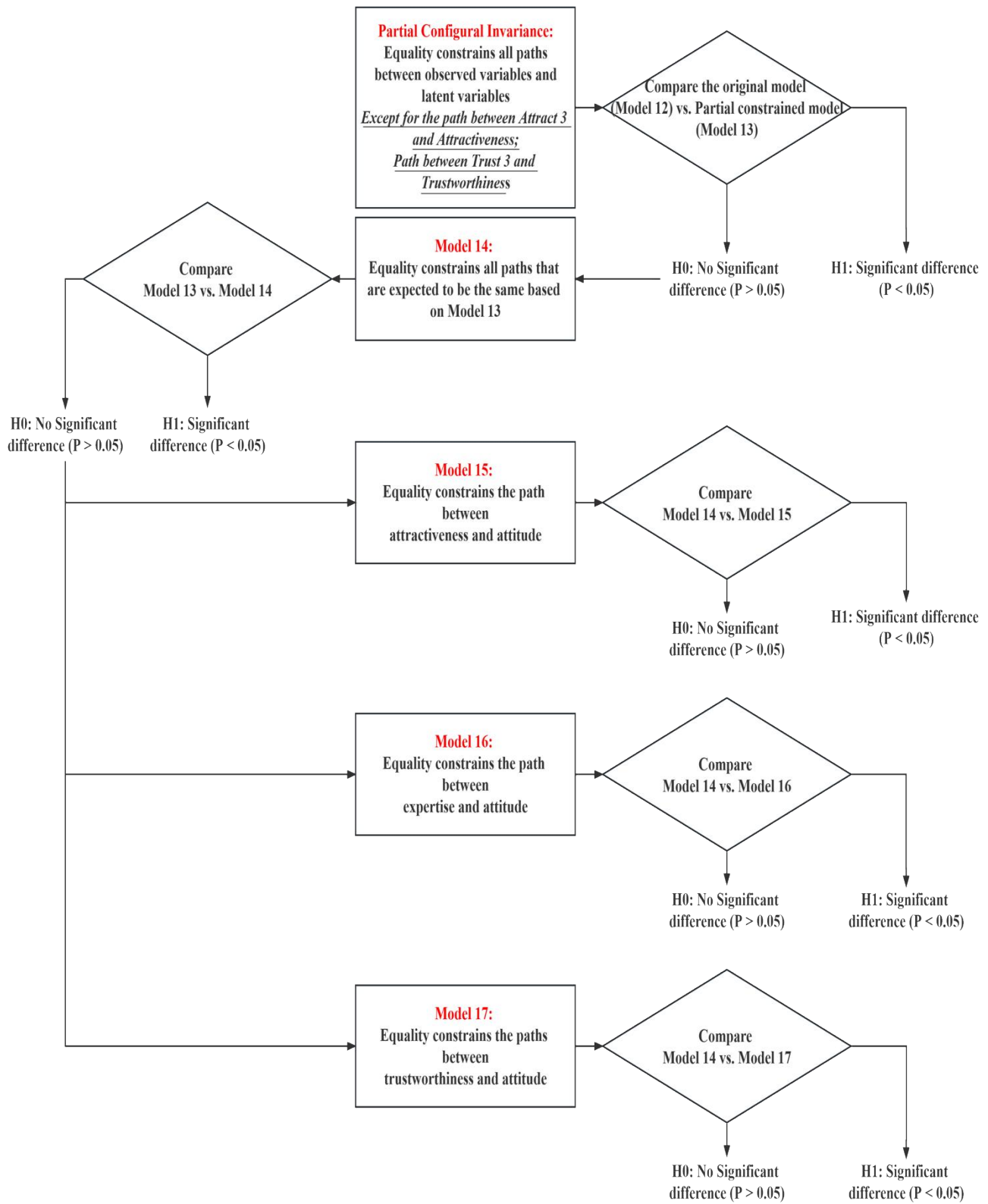


Figure 17. The analyzing process of moderation effect in traditional PSI

First of all, all fitting indexes of the original model of traditional PSI group (Model 12, Table 42) within a reasonable range. And Model 13 (Figure 12) is a Partial configural invariance model, all paths between observed variables and latent variables are equality constrained, only the path between Attract 3 and Attractiveness and the path between Trust 3 and Trustworthiness are excepted. We tested the model fit and the same factor structure should exist between Model 12 and Model 13. Thus, we assume the following Hypothesis:

H0: There is no significant difference between Model 12 and Model 13.

H1: There is a significant difference between Model 12 and Model 13.

As can be seen in Table 42, there was no significant difference between Model 12 and Model 13, $\Delta\chi^2(df)=20.548(17)$, $p=0.247$. Thus, H0 has been proved. It indicates that the constrained paths are not significantly different between high-level group and low-level group in Traditional PSI.

Table 42. Model fit of constraint models in online group

Model	χ^2	df	χ^2/df	RMSEA	GFI	AGFI	RFI	NFI	IFI	TLI	CFI
Model 12	494.999	484	1.023	0.007	0.921	0.902	0.901	0.914	0.998	0.998	0.998
Model 13	515.546	501	1.029	0.008	0.918	0.901	0.901	0.91	0.997	0.997	0.997
Comparison		$\Delta\chi^2(df)$		P-Value							
Model 12	Model 13	24.724(17)		0.101							

We assume that the “traditional PSI” could not moderate the paths related to the Purchase intention, that is to say the paths should be the same in different groups. Therefore, We equality constrain all paths that expected to be the same (Model 14, Figure 13). We tested the model fit and compare the differences between Model 13 and Model 14. Thus, we assume the following Hypothesis:

H0: There is no significant difference between Model 13 and Model 14.

H1: There is a significant difference between Model 13 and Model 14.

As can be seen in Table 43, there was no significant difference between Model 13 and Model 14, $\Delta\chi^2(df)=0.772(4)$, $p=0.942$. Thus, H0 has been proved, indicating that there was no groups difference between high-level group and low-level group in Traditional PSI.

Table 43. Model fit of constraint models in online group

Model	χ^2	df	χ^2/df	RMSEA	GFI	AGFI	RFI	NFI	IFI	TLI	CFI
Model 13	515.546	501	1.029	0.008	0.918	0.901	0.901	0.91	0.997	0.997	0.997
Model 14	516.318	505	1.022	0.007	0.917	0.902	0.901	0.91	0.998	0.998	0.998
Comparison		$\Delta\chi^2(df)$		P-Value							
Model 14	Model 13	0.772(4)		0.942							

Finally, we assume that the “traditional PSI” could moderate the paths between the three dimensions of the source model and attitude, thus after we constrained each of the moderate path separately on the basis of Model 14. As it shows in Figure 16.

Model 15: Based on the Model 14, equality constrains the path “Attractiveness →Attitude”

Model 16: Based on the Model 14, equality constrains the path “Expertise →Attitude”

Model 17: Based on the Model 14, equality constrains the path “Trustworthiness →Attitude”

Thus, we assume the following Hypothesis:

H0: There is no significant difference between Model 14 and Model 15; Model 14 and Model 16; Model 14 and Model 17.

H1: There is a significant difference between Model 14 and Model 15; Model 14 and Model 16; Model 14 and Model 17.

As can be seen in Table 44:

There was no significant difference between Model 14 and Model 15, $\chi^2(df)=0.186(1)$, $p=0.666$.

There was no significant difference between Model 14 and Model 16, $\Delta\chi^2(df)=0.035(1)$, $p=0.851$.

There was no significant difference between Model 14 and Model 17, $\Delta\chi^2(df)=0.052(1)$, $p=0.820$.

Thus, H0 has been proved. Therefore, there is no moderating effect on the Paths of “Attractiveness →Attitude”; “Expertise →Attitude”; “Trustworthiness →Attitude”.

Table 44. Model fit of constraint models in online group

Model	χ^2	df	χ^2/df	RMSEA	GFI	AGFI	RFI	NFI	IFI	TLI	CFI
Model 14	516.318	505	1.022	0.007	0.917	0.902	0.901	0.91	0.998	0.998	0.998
Model 15	516.504	506	1.021	0.007	0.917	0.902	0.902	0.91	0.998	0.998	0.998
Model 16	516.353	506	1.02	0.007	0.917	0.902	0.902	0.91	0.998	0.998	0.998
Model 17	516.37	506	1.02	0.007	0.917	0.902	0.902	0.91	0.998	0.998	0.998
Comparison				$\Delta\chi^2(\text{df})$				P-Value			
Model 15	Model 14			0.186(1)				0.666			
Model 16	Model 14			0.035(1)				0.851			
Model 17	Model 14			0.052(1)				0.82			

The path coefficient results in the Traditional group are shown in the following table (Table 45). According to the coefficient size and test results, The path coefficients of Attractiveness →Attitude, Expertise →Attitude and Trustworthiness →Attitude in the High-level PSI group and Low-level PSI group are both significant and positive, however there is no differences in the two groups.

Therefore, the moderation effect of Traditional PSI in the Traditional group does not hold. Hypothesis 7 is supported.

Table 45. Multi-Group analysis in traditional group

Path			PSI Level		$\Delta\chi^2(df)$	Result
			Low	High		
Attractiveness	→	Attitude	0.263***	0.267***	0.186(1)	Rejected
Expertise	→	Attitude	0.193**	0.213**	0.035(1)	Rejected
Trustworthiness	→	Attitude	0.186*	0.169*	0.052(1)	Rejected
Attractiveness	→	PI	0.278***	0.276***		
Expertise	→	PI	0.187**	0.222**		
Trustworthiness	→	PI	0.170*	0.227**		
Attitude	→	PI	0.226**	0.198**		

Note: *p<0.05, **p<0.01, ***p<0.001, two-tailed.

8.8 Discussion

For Study 2, the main purpose is to find out what is the role of PSI acting in the celebrity endorsement effect. we divided the forms of interaction between consumers and celebrity into two categories. In combination with the types of PSI formed by different types of endorsement, this study explores the conclusion that online celebrity endorsements have a stronger impact on celebrity endorsement effect. Due to the particularity of interactive social media, the high level of two-way PSI between consumers and online celebrity endorsers creates a context of authenticity of the social presence as well as create an intimate PSR which in turns could increase the identification and internalization process of online celebrity endorsement effectiveness. Moreover, this study does not have restriction on any type of online celebrities or traditional celebrities. The conclusion is relatively universal. And it can be better applied in the marketing strategy.

Therefore, from the calculation results and the psychological mechanism of PSI, marketers can make full use of the advantages of social media platforms and consider the potential consumer characteristics. Then, they can choose the right online celebrity as the endorser. Interact and engage with fans on interactive social media platforms that are commonly used by target consumers, and promote related products and brands, and strategically show the characteristics of online celebrity to consumers, so as to better attract consumers' attention to relevant content and further accelerate the transmission of relevant information through interactive mode, and deepen the impression of products in consumers' minds.

9. Study 3. The Influence of Congruence on Celebrity Endorsement Effectiveness

9.1 Introduction

The emergence and development of the Internet not only makes interactive social media platforms widely used in people's daily lives but also enables online celebrities, acting as new types of endorsers, to have been developing very well in the field of advertising endorsement via interactive social media platforms as information communication media. On the other hand, consumers' attitude and purchase intention is also weighed by the value brought by the meaning of consumption behavior (Levy, 1959). Marketers also provide consumers with special meaning in relation to what they offer, and one of the ways to influence the realization of this special meaning is through brand value expression (Park, 1986). Most scholars who study self-congruence agreed that self-congruence affects consumers' motivation to purchase and maintain brand loyalty (Sirgy et al., 1997). In the field of endorsement, most researchers have proved the congruence between celebrity endorser and endorsed product or brand, however, whether the congruence between consumers and celebrity endorser, especially for online celebrity endorsers, will affect the effectiveness of endorsement is still need to be proofed.

Therefore, Study 3 will fill this gap and explore the how PSI and congruence influence on endorsement effects in the context of interactive social media platform. We predict the congruence between consumer and endorsers would have a directly influence on the source model effect and the endorsement effect. In the context of interactive social media platforms, "congruence" and "PSI" can have an impact on the endorsement at the same time. Therefore, the model and structure formula of Study 3 are as follows (Figure 18):

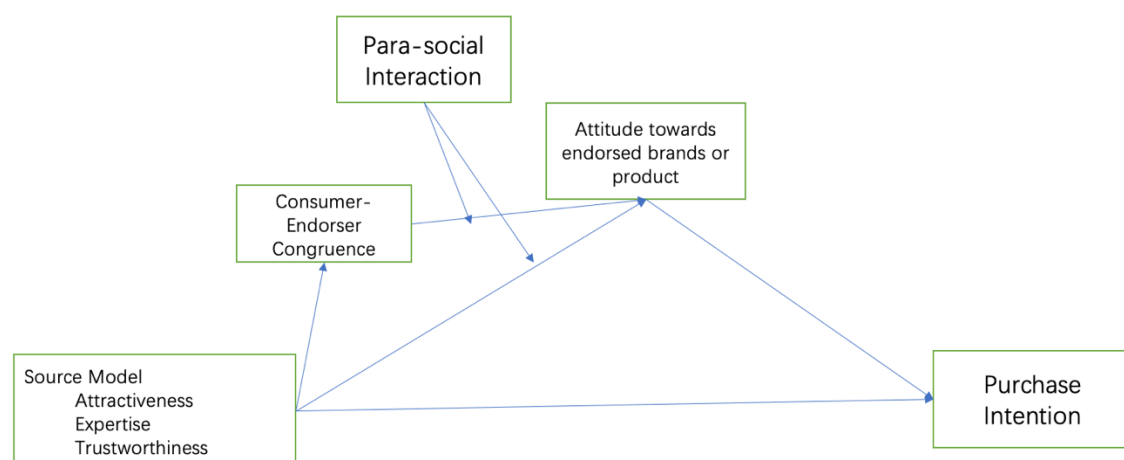


Figure 18. Conceptual Framework of Study 3

9.2 Hypothesis Development

Congruence & Attitude

The congruency between the consumer and the endorser can influence the consumer's judgment of the endorsed product or brand. Based on the social identity theory, identification derives from both actual and perceived similarity or the degree to which one perceives to have things in common with another person, as well as wishful identification, which is the desire to be like the other person (Hoffner & Buchanan 2005). Usually, the degree of congruency can be judged by the similarity of their characteristics. The similarity is described as "a supposed resemblance between the source and the receiver of the message" (McGuire, 1968). Consumers believe that they share certain interests, values, or characteristics with an endorser, and they are more likely to adopt their beliefs, attitudes, and behaviors (Reno et al., 1993; Kelman 2006).

Online celebrities themselves have attracted lots of consumers who combined self-concept or self-image with product consumption, leading to a high degree of congruence between customers and online celebrities. Self-congruence played a significant role in influencing consumer behaviors (Kressmann et al., 2006; Sirgy and Samli, 1985; Sirgy et al., 1991). For instance, the research found that self-image congruence affects advertising effectiveness (Bjerke & Polegato, 2006; Hong & Zinkhan, 1995). When consumers found self-congruence between their personalities of themselves and celebrities, they would have a positive attitude toward the product or brand.

Therefore, we could make hypotheses as follows:

H8. Consumer-endorser congruency can make a positive influence on consumers' attitude towards endorsed products or brand

Source Model, Congruence & Attitude

The source attractiveness model suggests that familiarity and likeability are two important factors that should be taken into account (McGuire, 1985). Past research in the celebrity endorsement literature used the term "attitude towards the celebrity" as a measure of attractiveness. The higher the attractiveness perception of online celebrity endorsers, the better the attitude of consumers towards the endorser, which will help shorten the distance between the endorser and consumers and gradually form a social group. According to the social identity theory, it is easier for the same social group to identify and find congruency, thus promoting in-group preference.

Source credibility represents the extent to which a source is perceived as being trustworthiness and expertise (Bhattacharjee & Sanford, 2006). In the internalization process, the endorser as a source of information is regarded as having more credibility, the information is more acceptable, and consumers are usually more inclined to support brands (Ashforth & Mael, 1989; Tuškej & Podnar, 2018). Online celebrities not only promote products, but also experience products acting as consumers. When an online celebrity plays the role of a consumer, he or she belongs to a social group with other

consumers. The perception of credibility on online celebrity endorsers can weaken the strangeness between consumers and spokespersons, make the relationship between them closer, and finally make it easier for them to form a social group and members in the social group. Trustworthiness strengthens the relationship between endorsers and consumers because it decreases perceived uncertainty, and helps one rely on another (Morgan & Hunt, 1994). Based on the social identity theory, the same group of people could find lots of congruency with each other, and consumers' identity with endorsers of the same social group can eventually be transformed into positive attitudes towards the products they endorse. What's more, individuals in the same social group attempt to create and maintain a positive social identity.

Therefore, based on the internalization process and social identity theory, the consumer-endorser congruency could mediate the effect between source credibility and consumers' attitude toward the endorsed product. When online celebrities being as information sources and pass information from the perspective of consumers.

H9a. Consumer-endorser Congruence could mediate the effect between attractiveness and attitude

H9b. Consumer-endorser Congruence could mediate the effect between expertise and attitude

H9c. Consumer-endorser Congruence could mediate the effect between trustworthiness and attitude

PSI, congruence & attitude

Researchers have demonstrated the moderating role of PSR in online celebrity endorsements. When exploring influencer marketing on social media, Bu and others (2022) pointed out that para-social relationships could moderate the relationships between homophily and customer participation behavior. Here, homophily refers to the degree of similarity between the consumer and the endorsers in the aspects of attitude, value, background as well as appearance. Other scholars have also tried to prove the interaction between consumer-endorser congruency and PSR. On the one hand, the strength of para-social interactions can influence followers' perceptions of homophily (Sakib et al., 2020). Online celebrity endorsers tend to directly address their followers in their posts, which connotes a certain closeness and makes followers see them as peers (Erz & Christensen 2018; Gannon & Prothero 2018). The ability to react to influencers' posts and connect with them may strengthen the perception that the influencer is similar to themselves (Schmidt, 2007). On the other hand, since the degree of congruency may also be used to describe the tendency for similar people to develop friendships, according to social identity theory, the more congruence an individual is to an online celebrity endorser, the more likely they are to identify with that endorser on social media (Lee & Watkins, 2016). In order to further become part of the same social group, consumers are more willing to interact with endorsers who have something in common with them and then narrow down the para-social relationship. Kamin (1990) offered a

similar viewpoint. The similarity of celebrity endorsers' images, attitudes, and lifestyles will also be influenced by their ability to create pleasant interaction effects with the public.

The formation of PSR largely depends on consumers' high attention to and deep understanding of media figures. PSI can lead consumers to pay attention to media figures for an extended period of time, enhance their trust and loyalty to online celebrities, and help them establish positive PSR (Brown & Basil, 2010; Chung & Cho, 2014). Simultaneously, interactive social media provides a virtual environment for consumers' PSI, and consumers may utilize the social rules and conventions they use in the real world to interact, strengthening their sense of social presence. In this way, it can generate a sense of substitution and eventually form a social group with the endorsers (Behm-Morawitz, 2013). Therefore, the high frequency of PSI plays a stabilizing role in the tightness of the PSR.

Thus, consumers can examine the overlap between influencers' images and their own self-concepts through PSI (De Veirman et al., 2017; Evans et al., 2017). When consumers and online celebrity endorsers become a social group due to high-frequency PSI, the congruence between them will be more prominent, and consumers can better understand the information delivered by endorsers. In consequence, different levels of online PSI will moderate the relationship between consumer-endorser congruence on celebrity endorsement effectiveness.

Based on the above, we can conclude that:

H10. PSI could moderate the relationship between congruence and attitude

9.3 Research Design

The stimulus product (mobile phone) is the same as Study 2. The Study 3's experiment will continue with study 2. According to the results of Study2's results, there is no significant difference between the high-level PSI and low-level PSI of traditional celebrity endorsement. Therefore, in Study3, we only analyze under the context of online celebrity endorsement

The overall experimental study was similar with Study 2, the survey was implemented by Wenjuanxing website, the survey began by asking all participants to indicate their gender, age, and education level, and then participants need to answer the following two questions to select eligible subjects:

- 1) Whether to use interactive social media platforms (1 = yes; 2 = no)
- 2) Whether know the online celebrity and celebrity endorsements. (1 = yes; 2 = no)

Participants who answer "no" will be stopped from answering the question. Then, participants were required to watch the picture of the stimuli product for at least 30 s in duration. The picture was presented with a mobile phone which with a virtual brand to avoid the perceived brand image of participants.

Participants were provided the following instructions: "Please take a moment to think about the product in the picture and think about the following situation": If this

product needs an online celebrity endorser, who do you think is a suitable online celebrity to endorse the product on interactive social media platform, please write down his/her name.

Then all of them were asked to choose the agreement level based on their perception of the endorser's characteristics. attractiveness (5 items), expertise (5 items), trustworthiness (5 items), and 3 items were measured the perceptions of PSI level. 4 items were measured the perceived consumer-endorser congruency. They were asked to indicate their agreement with the following statements (1 = strongly disagree, 5 = strongly agree):

To measure the attitudes towards the brand and purchase intention, 5 items were measured the "Attitude" and 4 items were measured "Purchase Intention" These items are the same in study 1 & 2 (see Table 30). All the items were measured with Likert five-point scale from 1 to 5. "1" is represented as "strongly disagree" and "5" is represented as "strongly agree". (See Table 30).

9.4 Measurements

Attitude and Purchase Intention are measured by the likelihood estimate as a dependent variable. Measurements are developed from Spears & Singh, 2004 with 5 items for attitude and 4 items for purchase intention. The construct for "trustworthiness", "expertise" and "attractiveness" were adopted from Ohanian (1990) with 5 items for each variable. As for the "PSI" with 3 questions were adopted from Auter & Palmgreen (2000). As for the "congruence" with 4 questions were adopted from Einwiller et al. (2006). All the items mentioned above were measured with Likert five-point scale from 1 to 5. "1" is represented as "strongly disagree" and "5" is represented as "strongly agree" (Table 46).

Table 46. Measurements items of variables in Study 3

Variables	Items	Measurement Items
Attractiveness: (Ohanian, 1990)	Attrac1	1. I think online celebrity endorser is attractive/Unattractive:
	Attrac2	2. I think online celebrity endorser is beautiful/Ugly
	Attrac3	3. I think online celebrity endorser is classy/Not classy
	Attrac4	4. I think online celebrity endorser is elegant/Plain
	Attrac5	5. I think online celebrity endorser is sexy/ Not Sexy
Expertise: (Ohanian, 1990)	Ex1	1. I think online celebrity endorser is an expert
	Ex2	2. I think online celebrity endorser is experienced
	Ex3	3. I think online celebrity endorser is knowledgeable
	Ex4	4. I think online celebrity endorser is qualified
	Ex5	5. I think online celebrity endorser is skilled
Trustworthiness: (Ohanian, 1990)	Trust1	1. I think online celebrity endorser is dependable
	Trust2	2. I think online celebrity endorser is honest

Para-social Interaction (Primack et al., 2017)	Trust3	3. I think online celebrity endorser is reliable
	Trust4	4. I think online celebrity endorser is sincere
	Trsut5	5. I think online celebrity endorser is trustworthy
	Int1	1. This online celebrity endorser often interacts with fans/consumers
	Int2	2. This online celebrity endorser use variable social media (social platform, video website, live platform) to communicate with fans/consumers
	Int3	3. This online celebrity endorser often interacts with fans/consumers in the new media platform using pictures, text, music, video or any other media forms
	Con1	1. This online celebrity endorser has the similar personality to mine.
	Con2	2. This online celebrity endorser is in line with my values.
	Con3	3. This online celebrity endorser has the similar taste as I do.
	Con4	4. This online celebrity endorser has the similar lifestyle as I do.
Congruence (Einwiller et al., 2006)	Att1	1. I think the product is appealing
	Att2	2. I think the product is good
	Att3	3. I think the product is pleasant
	Att4	4. I think the product is favorable
	Att5	5. I think the product is likable
Attitude towards Brand/product (Spears & Singh, 2004)	PI1	1. I am definitely going to buy the product
	PI2	2. I am definitely intending to buy
	PI3	3. I am having a high purchase interest
	PI4	4. I am probably buying it
Purchase Intention (Spears & Singh, 2004)		

9.5 Data Collection

The questionnaire was distributed by WJX randomly to the targeted respondents on September 15th, 2022. In order to save time, we used the express service of the platform. After 7 days of questionnaire distribution, we eliminated all the unqualified questionnaires and finally got 606 valid samples. The sample demographics can be shown in Table 47. The sample was based on age, gender, education level. Among 606 respondents, 294 respondents were male and 312 were female. As the survey was conducted online, most of the respondents' age range was between 20 and 40 years old, in fact there were 370 respondents in that range. More than half of the respondents have college degrees or above, there were more 59.9% of them.

Table 47. Demographics of sample

	Categories	Frequency	Percent (%)
Gender	Male	294	48.5
	Female	312	51.5
Age	under 20	108	17.8
	20-30	238	39.3
	31-40	132	21.8
	41-50	70	11.6
	over 50	58	9.6
	Middle School	25	4.1
Education Level	High School	218	36.0
	College	312	51.5
	Graduates	51	8.4

9.6 Data Analysis

Reliability and Validity Analysis

The measurement model was assessed by examining the internal reliability, convergent and discriminant validity. The results of this model can be shown in Table 48.

All the factor loadings were larger than 0.7 (Hair et al., 2010) and statistically significant. All the items' VIF is smaller than 10, and they all related to 1 (the biggest VIF is 2.207). This shows that there is no multicollinearity problem in this model.

To assess the convergent validity of the concept, the link between the latent variable and each of its indicators must be significant and the average variable extracted (AVE) must higher that 0.5, the results have showed that AVE ranged from 0.528-0.632 which meets the standard (Hair et al., 2012).

Moreover, due to the scales were designed based on the pervious study, content validity was ensured. As can be seen in the Table 48, Composite Reliability (CR) meets the standard requirements (> 0.7) which is ranged from 0.770 to 0.873. And Cronbach's alpha also exceeded the recommend threshold 0.7 (Hari et al., 2010). The calculated Cronbach's alpha values ranged from 0.768 to 0.873. Thus, these results in Table 32 showed the data had good convergent validity and reliability.

Table 48. Reliability and validity analysis

Factor	Item	St. Loading	VIF	Cronbach's α	CR	AVE
Attractiveness	Attrac1	0.768	1.968	0.867	0.868	0.569
	Attrac2	0.788	2.075			
	Attrac3	0.713	1.757			
	Attrac4	0.755	1.957			
	Attrac5	0.741	1.868			
Expertise	Ex1	0.774	1.974	0.859	0.859	0.549

	Ex2	0.688	1.689			
	Ex3	0.770	1.982			
	Ex4	0.765	1.953			
	Ex5	0.709	1.722			
Trustworthiness	Trust1	0.760	1.953	0.869	0.871	0.574
	Trust2	0.744	1.92			
	Trust3	0.772	2.018			
	Trust4	0.765	1.953			
	Trust5	0.740	1.873			
Attitude	Att1	0.731	1.872	0.869	0.869	0.570
	Att2	0.763	1.936			
	Att3	0.761	1.956			
	Att4	0.779	2.061			
	Att5	0.745	1.907			
PI	PI1	0.801	2.125	0.873	0.873	0.632
	PI2	0.805	2.207			
	PI3	0.783	2.079			
	PI4	0.793	2.126			
Para-social Interaction	Int1	0.722	1.592	0.768	0.770	0.528
	Int2	0.779	1.661			
	Int3	0.675	1.485			
Congruence	Con1	0.789	2.111	0.872	0.872	0.631
	Con2	0.794	2.138			
	Con3	0.784	2.058			
	Con4	0.811	2.206			

The average score of each dimension was calculated to represent the score of this dimension, and descriptive statistics and correlation analysis were carried out for each dimension. The correlation coefficients between the Attractiveness, Expertise and Trustworthiness with Congruence range from 0.146 to 0.243. The correlation coefficients of Attractiveness, Expertise, Trustworthiness and Congruence with Attitude ranged from 0.280 to 0.440. The correlation coefficients of Attractiveness, Expertise, Trustworthiness, Congruence and Attitude with Purchase intention ranged from 0.275 to 0.488. Therefore, the hypothesis of this study has been preliminarily confirmed. In addition, the correlation coefficient between any two dimensions is smaller than the square root of AVE (diagonal bold number) for each dimension, indicating that there is sufficient discriminative validity between different dimensions, and concepts can be well distinguished from each other (Table 49).

Table 49. Means, standard deviations, correlations and discriminant validity

Variable	1	2	3	4	5	6	7
1.Attractiveness	0.754						
2.Expertise	0.002	0.741					
3.Trustworthiness	0.008	-0.003	0.757				
4.Congruence	0.243**	0.146**	0.148**	0.755			
5.Attitude	0.387**	0.280**	0.309**	0.440**	0.795		
6.Purchase intention	0.383**	0.287**	0.275**	0.225**	0.488**	0.727	
7.PSI	-0.054	0.066	-0.031	-0.032	-0.063	0.050	0.794
M	3.030	2.952	2.997	2.995	3.112	2.983	2.839
SD	0.810	0.784	0.804	0.818	0.789	0.878	0.800

Note: *p<0.05, **p<0.01, ***p<0.001, two-tailed; Square-root of the AVEs are reported in bold along the diagonal of the correlation of constructs.

AMOS was used to build the structural equation model (Figure 12). The results showed (Table 50) that the model $\chi^2=358.887$, $df=336$, $RMSEA=0.011$, $GFI=0.959$, $AGFI=0.951$, $RFI=0.953$, $NFI=0.958$, $IFI=0.997$, $TLI=0.997$, $CFI=0.97$ all values are within the standard range, therefore Study 3' s model fits well (Table 49).

Table 50. Model fit of Study 3

Index	χ^2	df	χ^2/df	RMSEA	GFI	AGFI	RFI	NFI	IFI	TLI	CFI
Critical value			<3	<0.08	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9
Est.	358.887	336	1.068	0.011	0.959	0.951	0.953	0.958	0.997	0.997	0.997

9.7 Hypothesis Test

9.7.1 Direct Effect

In order to better understand the links between the study model' s many aspects, a structural model was created. The path coefficient was used to examine the connection between the dependent and independent variables. The results can be shown as followings (Table 51, Figure 19):

As for the “Attractiveness”, there is a positively direct impact from Attractiveness to Congruence ($\beta=0.275$, $Z=5.987$, $P<0.001$); Attractiveness to Attitude ($\beta=0.357$, $Z=8.456$, $P<0.001$) and Attractiveness to Purchase Intention (PI) ($\beta=0.327$, $Z=6.728$, $P<0.001$).

As for the “Expertise”, it can have significantly positive effects on Congruence ($\beta=0.164$, $Z=3.627$, $P<0.001$); Attitude ($\beta=0.275$, $Z=6.942$, $P<0.001$) and PI ($\beta=0.248$, $Z=5.613$, $P<0.001$).

As for the “Trustworthiness”, it also can positively make significant effect on Congruence ($\beta=0.167$, $Z=3.725$, $P<0.001$); Attitude ($\beta=0.305$, $Z=7.589$, $P<0.001$) as well as PI ($\beta=0.228$, $Z=5.092$, $P<0.001$).

As for the “Consumer-endorser Congruence”, there is a positively direct impact from Congruence to Attitude ($\beta=0.308$, $Z=7.303$, $P<0.001$).

As for the relationship between attitude and Purchase intention, the path coefficient is 0.249 ($\beta=0.249$, $Z=4.451$, $P<0.001$), which means that attitude can positively make an influence on consumers’ purchase intention.

Table 51. Path analysis

	Path		β	Z	p	Result
Attractiveness	→	Congruence	0.275	5.987	<0.001	Accepted
Expertise	→	Congruence	0.164	3.627	<0.001	Accepted
Trustworthiness	→	Congruence	0.167	3.725	<0.001	Accepted
Attractiveness	→	Attitude	0.357	8.456	<0.001	Accepted
Expertise	→	Attitude	0.275	6.942	<0.001	Accepted
Trustworthiness	→	Attitude	0.305	7.589	<0.001	Accepted
Congruence	→	Attitude	0.308	7.303	<0.001	Accepted
Attractiveness	→	PI	0.327	6.728	<0.001	Accepted
Expertise	→	PI	0.248	5.613	<0.001	Accepted
Trustworthiness	→	PI	0.228	5.092	<0.001	Accepted
Attitude	→	PI	0.249	4.451	<0.001	Accepted

9.7.2 Mediation Effect

Additionally, we predict a mediating effect of attitude between each of the independent variables with Purchase Intention. And a mediating effect of Congruence between each of the independent variables with Attitude. In order to test this mediation, AMOS was used to perform 5000 Bootstrap analyses and a 95% confidence interval (CI) of Bias-corrected was calculated. As shown in Table 52, it seems that all the Indirect paths can go through from independent variables to congruence as well as attitude and then make positive significant effect on Purchase intention.

Among them, Congruence has the strongest mediator effect on the relationship between Attractiveness and Attitude ($\beta=0.085$, 95% CI= [0.058, 0.117]). Then followed by making mediator effect on the path between Trustworthiness and Attitude ($\beta=0.052$, 95% CI= [0.014, 0.083]). Finally, the path with the least mediator impact is from Expertise to Attitude ($\beta=0.050$, 95% CI= [0.026, 0.079]).

Attitude have the strongest mediator effect on the relationship between Attractiveness and Purchase Intention ($\beta=0.089$, 95% CI= [0.049, 0.135]). Then followed by making mediator effect on the path between Expertise to Purchase Intention ($\beta=0.068$, 95% CI= [0.037, 0.107]). Finally, the path with the least mediator impact is from Trustworthiness and Purchase Intention ($\beta=0.076$, 95% CI= [0.043, 0.114]).

Moreover, Attractiveness can have a significant effect on PI through Congruence and Attitude ($\beta=0.021$, 95% CI= [0.011, 0.035]); Expertise can have a significant effect on PI through Congruence and Attitude ($\beta=0.013$, 95% CI= [0.006, 0.024]); Trustworthiness can have a significant effect on PI through Congruence and Attitude ($\beta=0.013$, 95% CI= [0.006, 0.025]);

Table 52. Mediation analysis

Mediation path	β	Bootstrap			p	Results
		SE	95% CI			
Attractiveness→ Congruence→ Attitude	0.085	0.015	0.058	0.117	<0.001	Accepted
Expertise→ Congruence→ Attitude	0.050	0.013	0.026	0.079	<0.001	Accepted
Trustworthiness→ Congruence→ Attitude	0.052	0.014	0.026	0.083	<0.001	Accepted
Attractiveness→ Attitude→ PI	0.089	0.022	0.049	0.135	<0.001	Accepted
Expertise→ Attitude→ PI	0.068	0.018	0.037	0.107	<0.001	Accepted
Trustworthiness→ Attitude→ PI	0.076	0.018	0.043	0.114	<0.001	Accepted
Congruence→ Attitude→ PI	0.077	0.019	0.042	0.115	<0.001	Accepted
Attractiveness→ Congruence→ Attitude→ PI	0.021	0.006	0.011	0.035	<0.001	Accepted
Expertise→ Congruence→ Attitude→ PI	0.013	0.004	0.006	0.024	<0.001	Accepted
Trustworthiness→ Congruence→ Attitude→ PI	0.013	0.005	0.006	0.025	<0.001	Accepted

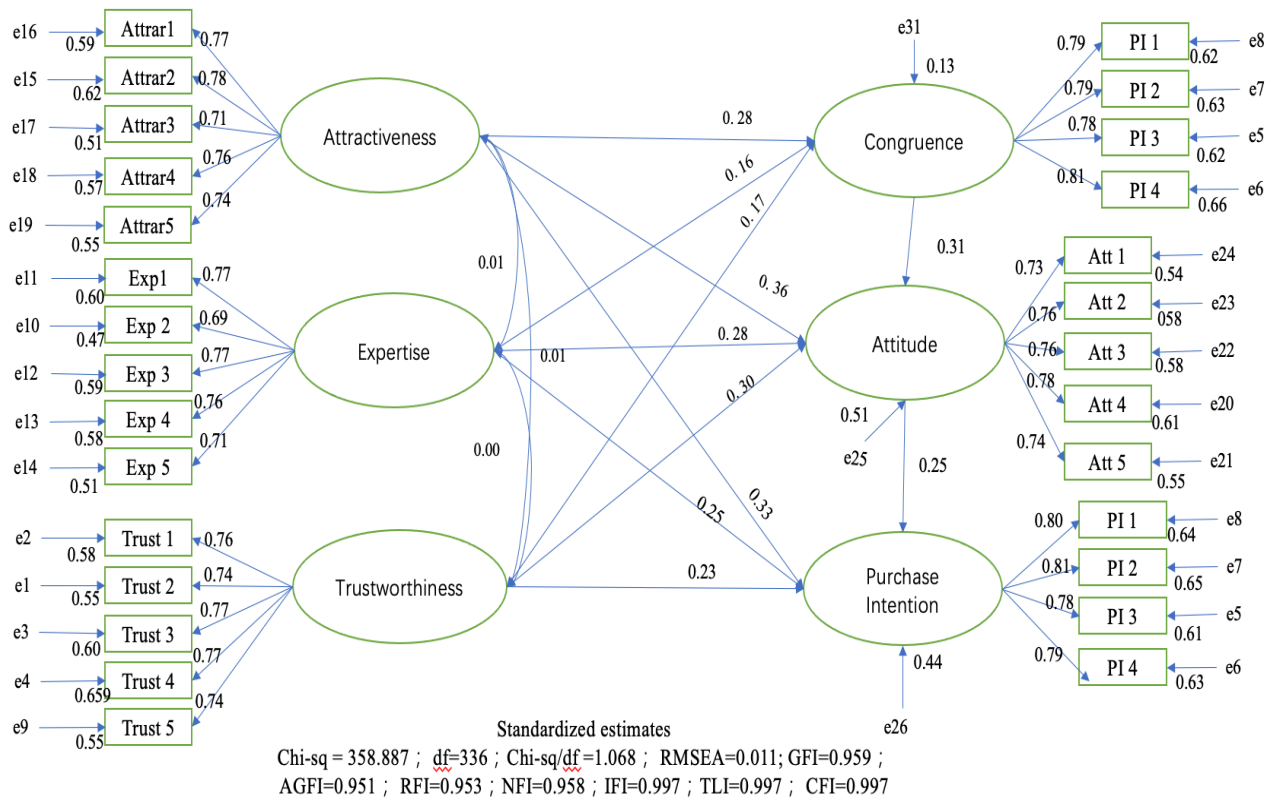


Figure 19. Path Loading & Structure Equation Model of Study 3

9.7.3 Moderation Effect

The data were divided into two groups by employing the *median split* on online PSI Level ($N_{\text{Low-level}} = 288$; $N_{\text{High-level}} = 318$). AMOS was used for multi-group analysis. According to the hypothesis, we test whether the four moderated paths (Attractiveness → Attitude, Expertise → Attitude, Trustworthiness → Attitude and Congruence → Attitude) between the two groups are independently different, the analyzing process is shown in Figure 20.

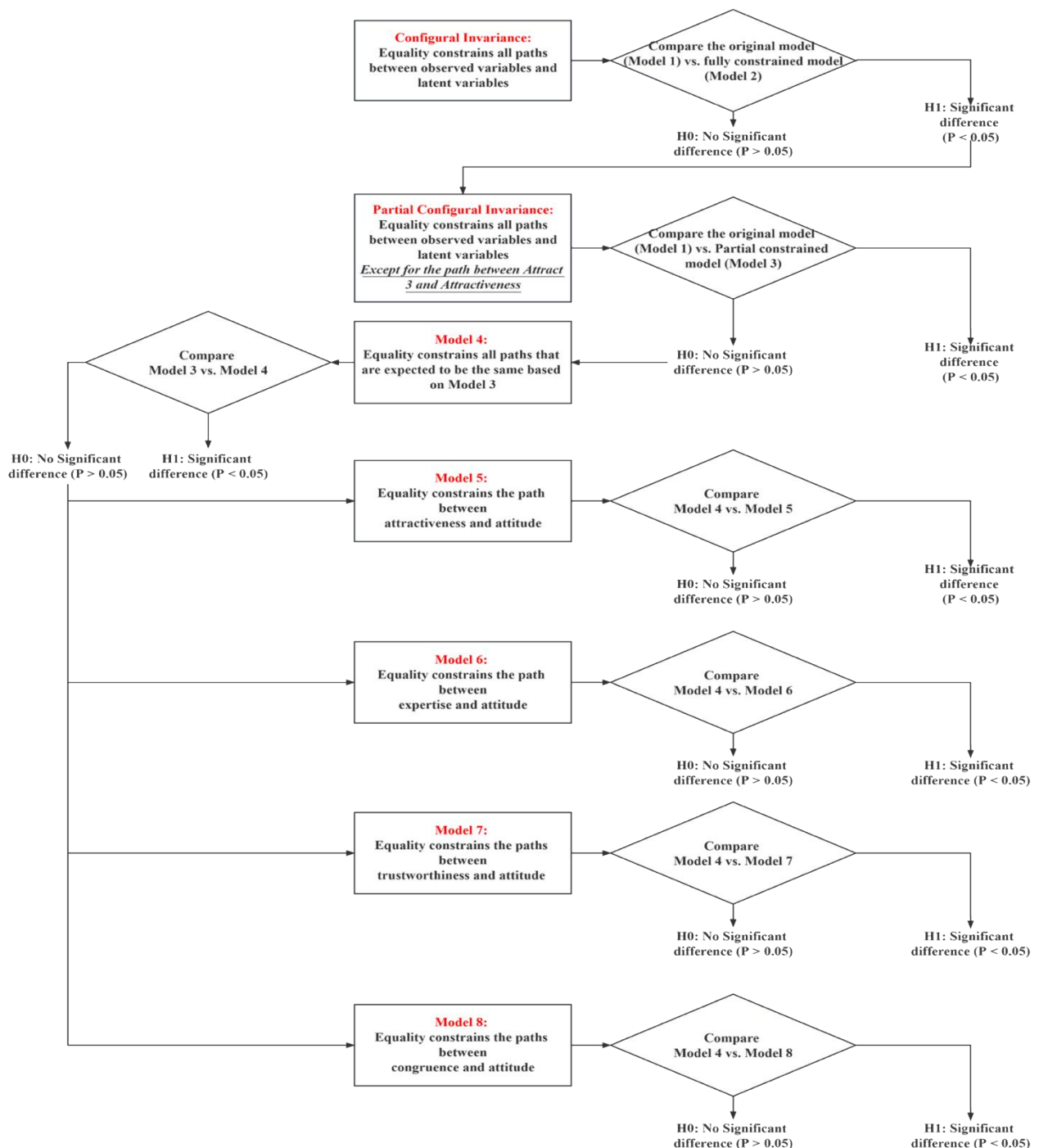


Figure 20. The analyzing process of moderation effect

First of all, all fitting indexes of the original model of online PSI group (Model 1, Table 53) within a reasonable range. Then the Configural invariance analysis is done based on Model 1. We equality constrain all paths between observed variables and latent variables (Model 2, Figure 21). The same factor structure should exist between Model 1 and Model 2. Thus, we assume the following Hypothesis:

H0: There is no significant difference between Model 1 and Model 2.

H1: There is a significant difference between Model 1 and Model 2.

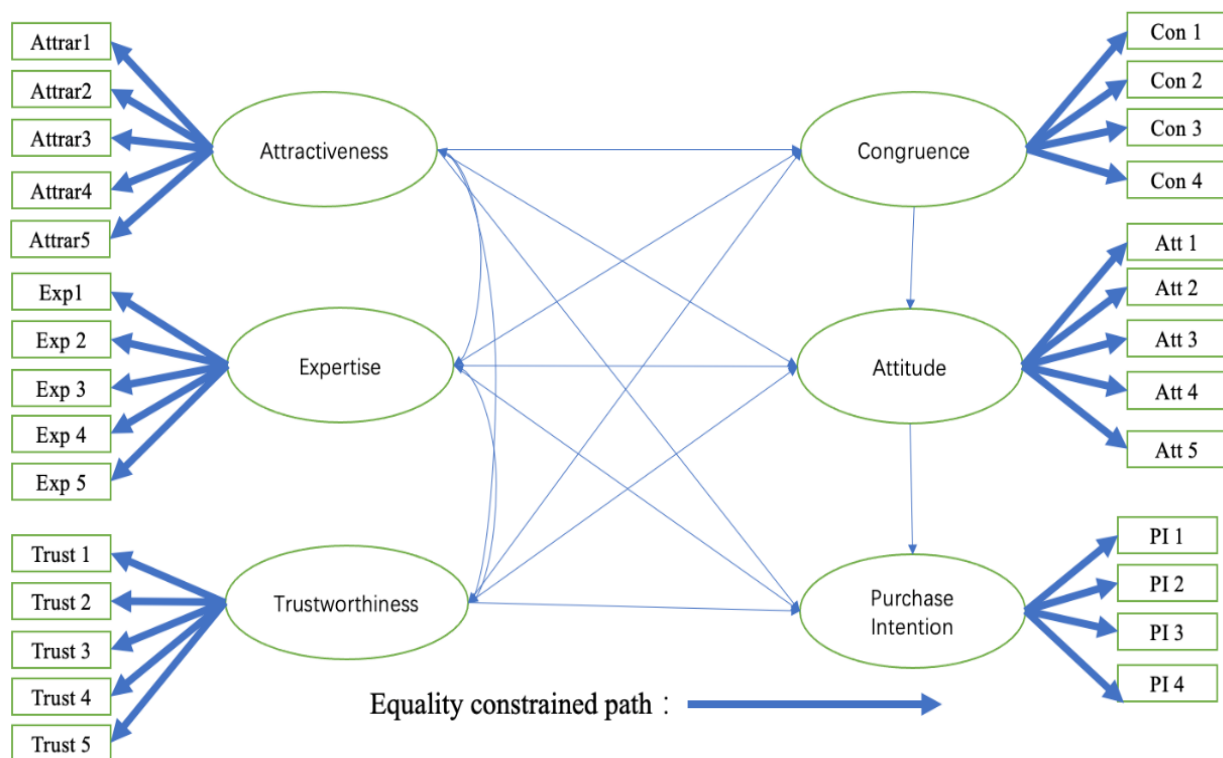


Figure 21. The constrained path of Model 2

As can be seen in Table 53, there was a significant difference between Model 2 and Model 1, $\Delta\chi^2(df)=37.258(22)$, $p=0.022$. Thus, H1 has been proved. It indicates that paths between groups are different.

Table 53. Model fit of constraint models

Model	χ^2	df	χ^2/df	RMSEA	GFI	AGFI	RFI	NFI	IFI	TLI	CFI
Model 1	679.331	672	1.011	0.004	0.93	0.915	0.917	0.926	0.999	0.999	0.999
Model 2	716.588	694	1.033	0.007	0.926	0.914	0.915	0.922	0.997	0.997	0.997
Comparison				$\Delta\chi^2(\text{df})$					P-Value		
Model 2	Model 1	37.258(22)					0.022				

Therefore, the Partial Configural Invariance should be tested. Based on Model 1, we equality constrain on all paths between observed variables and laten variables except the path between Attract 3 and Attractiveness (Model 3, Figure 22). We tested the

model fit and the same factor structure should exist between Model 1 and Model 3. Thus, we assume the following Hypothesis:

H0: There is no significant difference between Model 1 and Model 3.

H1: There is a significant difference between Model 1 and Model 3.

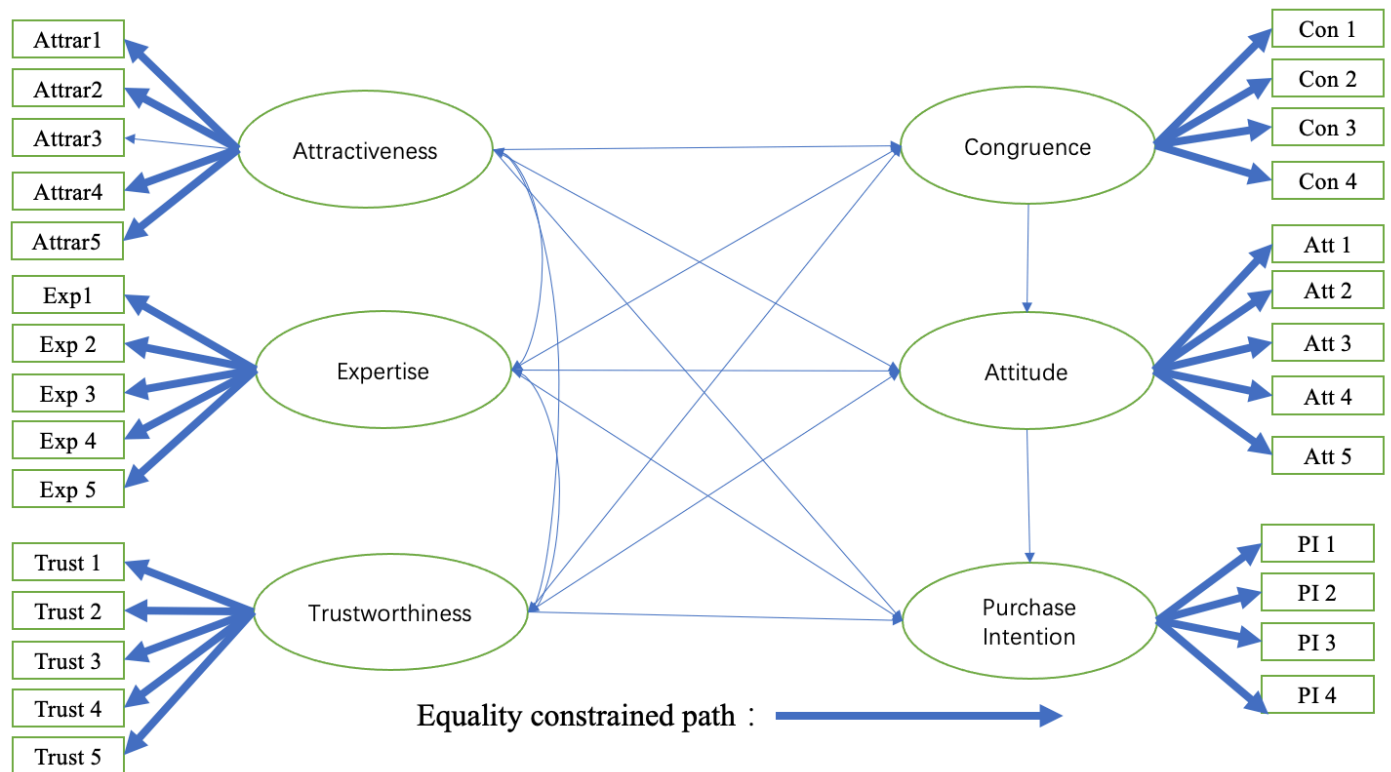


Figure 22. The constrained path of Model 3

As can be seen in Table 54, there was no significant difference between Model 3 and Model 1, $\Delta\chi^2(df)=31.008(21)$, $p=0.074$. Thus, H0 has been proved. It indicates that the constrained paths are not significantly different between groups.

Table 54. Model fit of constraint models

Model	χ^2	df	χ^2/df	RMSEA	GFI	AGFI	RFI	NFI	IFI	TLI	CFI
Model 1	679.331	672	1.011	0.004	0.93	0.915	0.917	0.926	0.999	0.999	0.999
Model 3	710.339	693	1.025	0.006	0.927	0.914	0.915	0.922	0.998	0.998	0.998
Comparison		$\Delta\chi^2(df)$		P-Value							
Model 3	Model 1	31.008(21)		0.074							

Later, the structural coefficient analysis among multiple groups was carried out. According to the moderation hypothesis, the “PSI” could only moderate the paths related attitude. As for the path related to the Purchase intention as well as the paths between the source model and congruence should be the same in different groups. Therefore, We equality constrain all paths that expected to be the same (Model 4, Figure 23). We tested the model fit and compare the differences between Model 3 and Model 4. Thus, we assume the following Hypothesis:

H0: There is no significant difference between Model 3 and Model 4.

H1: There is a significant difference between Model 3 and Model 4.

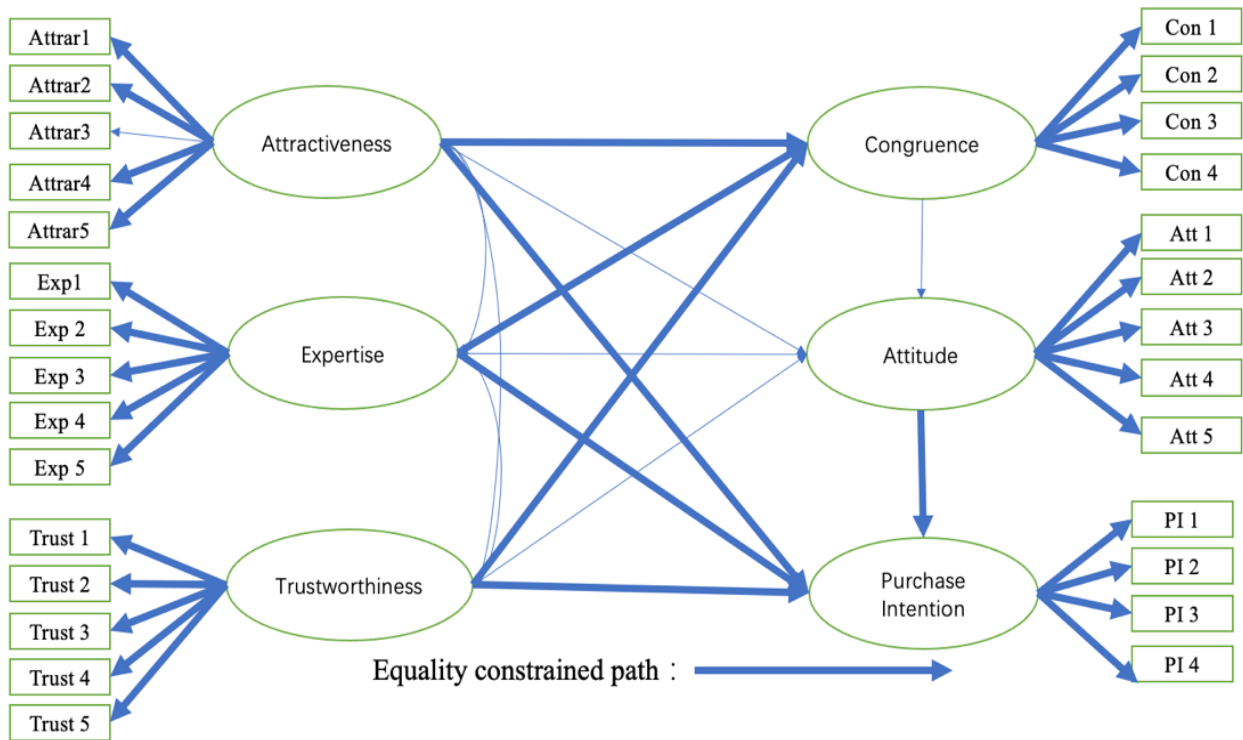


Figure 23. The constrained path of Model 4

As can be seen in Table 55, there was no significant difference between Model 4 and Model 3, $\Delta\chi^2(df)=0.864(7)$, $p=0.997$. Thus, H0 has been proved, indicating that there was no groups difference between high-level PSI and low-level PSI.

Table 55. Model fit of constraint models

Model	χ^2	df	χ^2/df	RMSEA	GFI	AGFI	RFI	NFI	IFI	TLI	CFI
Model 3	710.339	693	1.025	0.006	0.927	0.914	0.915	0.922	0.998	0.998	0.998
Model 4	711.203	700	1.016	0.005	0.927	0.915	0.916	0.922	0.999	0.999	0.999
Comparison				$\Delta\chi^2(\text{df})$				P-Value			
Model 4	Model 3	0.864(7)				0.997					

Finally, due to the “online PSI” could moderate the paths between the three dimensions of the source model and attitude, as well as the path between congruence and attitude. Thus, we constrained each of the moderate path separately on the basis of Model 4. As it shows in Figure 24.

Model 5: Based on the Model 4, equality constrains the path “Attractiveness →Attitude”

Model 6: Based on the Model 4, equality constrains the path “Expertise →Attitude”

Model 7: Based on the Model 4, equality constrains the path “Trustworthiness →Attitude”

Model 8: Based on the Model 4, equality constrains the path “Congruence →Attitude”

Each of the constrained moderation path model should have a significant difference with Model 4. Thus, we assume the following Hypothesis:

H0: There is no significant difference between Model 4 and Model 5; Model 4 and Model 6; Model 4 and Model 7; Model 4 and Model 8.

H1: There is a significant difference between Model 4 and Model 5; Model 4 and Model 6; Model 4 and Model 7; Model 4 and Model 8.

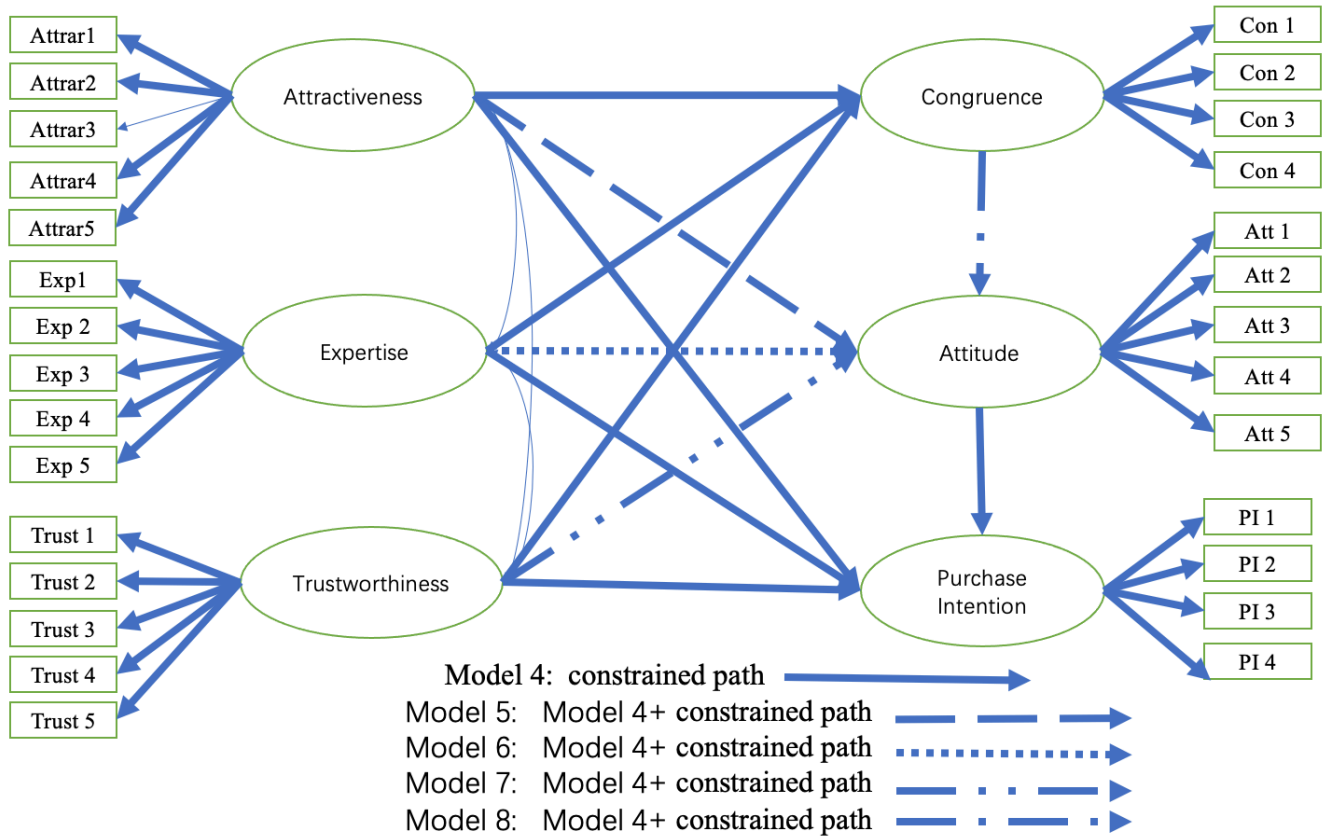


Figure 24. The constrained path of Model 5,6,7,8

As can be seen in Table 56:

There was a significant difference between Model 4 and Model 5, $\Delta\chi^2(df)=8.227(1)$, $p=0.004$.

There was a significant difference between Model 4 and Model 6, $\Delta\chi^2(df)=9.470(1)$, $p=0.002$.

There was a significant difference between Model 4 and Model 7, $\Delta\chi^2(df)=7.700(1)$, $p=0.006$.

There was a significant difference between Model 4 and Model 8, $\Delta\chi^2(df)=14.194(1)$, $p<0.001$. H1 has been proved.

Therefore, there is a moderating effect on the Path of “Attractiveness →Attitude”; “Expertise →Attitude”; “Trustworthiness →Attitude” and “Congruence →Attitude”.

Table 56. Model fit Table of constraint models

Model	χ^2	df	χ^2/df	RMSEA	GFI	AGFI	RFI	NFI	IFI	TLI	CFI
Model 4	711.203	700	1.016	0.005	0.927	0.915	0.916	0.922	0.999	0.999	0.999
Model 5	719.43	701	1.026	0.007	0.926	0.914	0.915	0.921	0.998	0.998	0.998

Model 6	720.673	701	1.028	0.007	0.926	0.914	0.915	0.921	0.998	0.997	0.998
Model 7	718.903	701	1.026	0.007	0.926	0.914	0.915	0.922	0.998	0.998	0.998
Model 8	725.397	701	1.035	0.008	0.925	0.914	0.915	0.921	0.997	0.997	0.997
Comparison			$\Delta\chi^2(df)$		P-Value						
Model 5	Model 4		8.227(1)		0.004						
Model 6	Model 4		9.470(1)		0.002						
Model 7	Model 4		7.700(1)		0.006						
Model 8	Model 4		14.194(1)		<0.001						

The path coefficient results are shown in the following Table 57. According to the coefficient size and test results, for the path from Attractiveness to Attitude, the path coefficient of Low PSI Level group ($\beta=0.265$, $P<0.001$) was significantly lower than that of High PSI Level group ($\beta=0.493$, $P<0.001$), $\Delta\chi^2(df)=8.227(1)$, $P=0.019$.

For the path from Expertise to Attitude, the path coefficient of Low PSI Level group ($\beta=0.176$, $P=0.006$) was significantly lower than that of High PSI Level group ($\beta=0.366$, $P<0.001$), $\Delta\chi^2(df)=9.470(1)$, $P=0.002$.

For the path from Trustworthiness to Attitude, the path coefficient of Low PSI Level group ($\beta=0.175$, $P=0.006$) was significantly lower than that of High PSI Level group ($\beta=0.381$, $P<0.001$), $\Delta\chi^2(df)=7.700(1)$, $P=0.027$.

For the path from Congruence to Attitude, the path coefficient of Low PSI Level group ($\beta=0.215$, $P=0.001$) was significantly lower than that of High PSI Level group ($\beta=0.424$, $P<0.001$), $\Delta\chi^2(df)=14.194(1)$, $P<0.01$. In addition, other path coefficients were not significantly different between the two groups.

Therefore, PSI level has a significant moderation effect, providing support for Hypothesis

Table 57. Multi-Group analysis

Path			PSI Level		$\Delta\chi^2(df)$	Hypothesis
			Low	High		
Attractiveness	→	Congruence	0.269***	0.276***		
Expertise	→	Congruence	0.154*	0.173**		
Trustworthiness	→	Congruence	0.145*	0.191**		
Attractiveness	→	Attitude	0.265***	0.493***	8.227(1)**	Supported
Expertise	→	Attitude	0.176**	0.366***	9.470(1)**	Supported
Trustworthiness	→	Attitude	0.175**	0.381***	7.700(1)*	Supported
Congruence	→	Attitude	0.215**	0.424***	14.194(1)***	Supported
Attractiveness	→	PI	0.328***	0.316***		
Expertise	→	PI	0.247***	0.242**		
Trustworthiness	→	PI	0.220***	0.229**		
Attitude	→	PI	0.249***	0.251*		

Note: * $p<0.05$, ** $p<0.01$, *** $p<0.001$, two-tailed.

9. 8 Discussion

Through long-term interaction and communication with online celebrity endorsers on the interactive social media platform, consumers have a more in-depth understanding of endorsers. From the perception of the attractiveness and credibility of the online celebrity endorsers to understand their interests and hobbies and personality as well, this para-social interaction process is gradually in-depth, the scope is also increasingly expanding, even because of some transparent properties of the Internet, some of the hidden private characteristics of the online celebrity endorsers will be dug out by the high-level PSI consumers. Under the circumstance of increasing interaction with the consumers, it is very easy for them to perceive some views and opinions, so as to identify the aspects in line with their own expectations or values. Under the mechanism of the information source attractiveness model and the Meaning Transfer Model, Consumers also tend to favor and likeability of the products and brands endorsed by the online celebrity, which later stimulates consumers' purchase intention.

The interaction behavior between the online celebrity endorsers and consumers forms a special emotional bond, which drives consumers to add a "fan filter" for them emotionally, as well as unconsciously beautify the appearance of net celebrities and personality attraction; Consumers would pay closer attention to the status of online celebrities, their work content and social media account updates; In terms of behavior, they will imitate the products of online celebrities and increase their para-social interaction behaviors in order to develop real interpersonal relationships. When online celebrities appear in brand endorsement behavior, consumers respond to the brand through different levels. In terms of emotion, consumers have empathy for the brand or the product endorsed by online celebrities and transfer the perceived attraction. Use the same brands and products to get closer to Internet celebrities.

10. Conclusion

10.1 Summary

All the hypotheses from study 1 to study 3 have been tested and the results have been supported. The dissertation found that in the era of e-commerce, with the context of the diversification of interactive social media platforms, in addition to the credibility and attractiveness of information sources, interactivity and congruence with endorsers can also influence consumers' attitudes and purchase intentions. Other results have also been found as followings:

The importance of source model

First, the pertinent literature is studied, and the categories "attractiveness, expertise, and trustworthiness" are chosen as independent variables based on source effect. Furthermore, the effectiveness of online celebrity endorsement is examined on two dimensions: customers' attitude toward the brand and purchase intention. The study 1 test findings reveal that all three variables have a substantial influence on the endorsement effects. The attractiveness of online celebrity endorsers has the greatest effect on customers' brand attitudes and purchase intentions. According to the findings of Study 1, in the Internet era of many marketing forms, most customers would modify their attitudes about products and be inclined to consume them because of the physical attractiveness of online celebrity endorsers. Meanwhile, the source's credibility is still critical. When evaluating a product or brand, consumers will also be impacted by the credibility of online celebrity endorsers. Also, based on the correlation and SEM analyses in Study 1, the way customers feel about the endorsed brand could be used as a mediator variable to affect how likely they are to buy that brand.

The significant effect of para-social interaction on the online celebrity endorsement effect

In Study 2, the various types of para-social interaction between consumers and celebrity endorsers were investigated in order to differentiate between traditional and online celebrity endorsement. This higher frequency of two-way PSI can lead to better intimacy relations and a more immersive social presence than only one-way PSI. It provides a catalyst for the promotion of endorsement effectiveness. For the high level of online PSI, it could lead consumers to identify and internalize endorsers' advertising information much better.

The influential factors of Online Celebrity Endorsement

Besides, following online celebrities that provide useful information and original content, consumers will also make interaction on interactive social media platforms with online celebrity endorsers who have something in common (congruence). This gives fans or consumers a joyful and exciting emotional experience, improves their social lives, and adds to their daily communication activities.

The effect of online celebrity endorsement not only depends on some characteristics of online celebrities themselves, such as good personality, beautiful appearance, expert knowledge, positive interaction, etc. But also depends on consumers themselves, when consumers think they belong to the same social group as online celebrity endorsers, or want to be in the same social group, consumers will intend to utilize the same brands and products as online celebrities in order to bridge the gap. The process of para-social interactions will gradually increase, from noticing celebrities' habits, interests as well as personality qualities. With more and more engagement with customers, it is quite easy for consumers to perceive some thoughts and attitudes of online celebrities with which they agree. As a result, customers' purchasing inclinations will improve.

10.2 Theoretical Development

In the context of the rapid development of e-commerce platforms in China, three studies were conducted in this dissertation to explore the factors influencing the effect of online celebrity endorsement in interactive social media platforms. Based on the advertising psychological effect model, this dissertation explores a new model of Online Celebrity Endorsement which is developed from the Celebrity Endorsement Theory. As an information source, Online celebrity endorsement once again certified the importance of the social influence process in the endorsement effect. It negates the conclusion that source credibility is more important than source attractiveness. In the process of online celebrity endorsement, the attractiveness of the information source is often more important. The empirical conclusions obtained are partially different from conclusions previously explored by researchers on the endorsement effects of traditional celebrity endorsement. Although the two types of endorsers, as sources, can influence the endorsement effect through the attractiveness and credibility of the sources, the influence on the endorsement effect is different.

As for the new phenomenon of online celebrity endorsement, this dissertation discussed the mechanism of effectiveness of online celebrity endorsement from the perspective of online celebrity attributes. This dissertation added new influencing factors: consumer-endorser congruence and para-social interaction, which further verify the importance of social identity in endorsement effect, and confirm the relationship between social identity and source model.

Para-social interaction was applied in Study 2 and Study 3. In the process of endorsement, previous studies have considered that consumers are passive subjects as endorsement as a means of publicity. And consumer behavior is the result of marketing factors. Based on the theoretical viewpoint of para-social interactions, this dissertation considered that consumers are active actors in the marketing process in interactive social media platforms. The consumer could not only measure the influence of online celebrity endorsements by subjective judgment but also adjust the effect of the influence of online celebrity endorsers by interacting with online celebrities. Paying

attention to the interaction between consumers and online celebrities has reference value to the research and practice of online celebrity endorsement. It can also provide a more thorough understanding of the mechanism of endorsement marketing factors and the optimization direction of marketing from a theoretical perspective.

In previous studies, most of the literature related to online celebrity endorsers used case analysis. There is a lack of theoretical support in the existing research on online celebrities. Therefore, this study enriched the studies on online celebrity endorsement from the theoretical perspective, and laid a foundation for the subsequent empirical research related to online celebrities. Adding new influencing factors: consumer-endorser congruence and PSI, which further verify the importance of social identity in endorsement effect, and confirm the relationship between social identity and source model.

10.3 Marketing Implications

The influence of online celebrity endorsers can directly affect consumers' attitudes toward the brand and purchase intention. And it can also influence consumers through interactive behaviors. Therefore, when choosing online celebrities as endorsers, the brand should comprehensively examine the ability of online celebrities, and investigate the stability of the influence of online celebrities, so as to screen out the network of celebrity endorsers suitable for the brand.

Previous studies have shown that when online celebrities act as brand marketers, the compatibility between the image of online celebrities and the brands, product types, and marketing content determines consumers' acceptance of marketing content and brand attitudes (Fern et al., 2015). According to the endorser's strategy, the appearance appeal, type, and status of online celebrities need to be considered. In addition, brands should also examine the internal factors of online celebrities, such as temperament, personality, value pursuit, fan group compatibility, and so on. According to Sui & Zhou (2016), the characteristic attributes of consumers' perception of online celebrities will be transferred to brands due to external marketing behaviors and internal empathy psychology. Only when online celebrities and brands are consistent in personality, value pursuit, and consumer positioning, the transfer of perceived characteristics can meet the expectations of the consumers, causing a good impression of consumers of the brands rather than antipathy to the brands.

Brands also need to consider the degree and types of interaction with consumers. The effectiveness of celebrity endorsements is both time-sensitive and continuous. When brands contract with online celebrities as endorsers, the influence effect not only occurs at the moment when consumers contact the advertising information but also includes the following period. The higher the level of interaction, the higher the consumers' cognition of online celebrities, and the more favorable the effect of endorsement.

Different strategies for brand endorsers should be adopted at different stages of brand development. In the early stage of the brand, the main factor to select a suitable endorser is the source attractiveness. In the early stage of the brand, brand or product popularity and market recognition are both relatively low as well as the brand personality has not formed yet. At this time, for brands, it is urgent to enhance their popularity, attracting the attention of consumers as well. Thus, the physical attractiveness of endorsers can not only improve the brand's popularity but also enhance consumers' trust in the brand to a certain extent, increasing consumers' purchase intention toward the brand. Therefore, for some emerging brands, endorsers provide a shortcut to quickly enhance brand equity.

In the mature stage of the brand, due to the development of a certain period, the brand has a relatively stable consumer group and has formed a certain brand image and brand personality of consumers. At this time, the brand should consider how to improve or maintain the brand image and personality as well as consider whether the temperament, personality, and image contained in the endorsers are conducive to the promotion of the brand.

From the perspective of sales channels, although online publicity and sales have become mainstream sales methods, offline publicity has not completely withdrawn from the market. Therefore, endorsers with different interaction levels can be selected according to different publicity and sales methods.

10.4 Theoretical Contribution & Originality

Previous empirical analysis tended to explore a single category of endorsers, such as athletes, movie stars, etc. Although some research papers also compared the endorsement effects of different kinds of endorsers, these empirical analyses were usually carried out by selecting one or two specific celebrity endorsers. And the results were very specific, and the conclusions are single with non-universality. To fill the gap left by the lack of universality of the research objects in previous studies, this study did not specify a specific endorser as the research object but conducted the research from a more general perspective. This dissertation divided the types of endorsers (traditional endorsers and online celebrity endorsers) from a broader perspective through three studies. As a result, the degree of contribution and the endorsement effect could be more clearly distinguished.

Most of the previous studies on traditional celebrity endorsements have confirmed that credibility is more important than attractiveness in the endorsement effect. Nevertheless, this dissertation proved that the effect of attractiveness is obviously greater than credibility when the source is online celebrity endorsers; in other words, the most powerful influence on brand attitude and purchase intention is the attractiveness of the source. Therefore, this dissertation provided a theoretical explanation for the influencing factors of consumers' brand attitudes and purchase intentions and proved that online celebrity endorsers have a good endorsement effect.

through the credibility and attractiveness of the sources. This dissertation enriched the theoretical research significance of celebrity endorsement.

This dissertation discussed the role of para-social interaction in endorsement effects. This dissertation explored the important role of para-social interaction in the process of endorsement in the current internet era through Study 2 and Study 3. In previous studies, researchers usually explore the important role of para-social interaction in endorsement by distinguishing the degree of PSR. In this thesis a new classification method is proposed, which provides new ideas for subsequent studies.

In Study 2, by distinguishing different types of PSI, the difference between traditional endorsement and online celebrity endorsement is verified. As for the online type of PSI, we not only considered the PSR but also discussed the social presence due to the different level of two-way PSI. Thus, it is now known that the online type of PSI plays a moderator role in online celebrity endorsement, which can better enhance the internalization and identification process of the endorsement effect. Therefore, in combination with para-social interaction theory, this dissertation confirmed the importance of interaction in endorsement and the influencing factors that enrich the model of the endorsement effect from a theoretical perspective.

In Study 3, congruence between consumers and endorsers was regarded as an important feature of the endorser. Previous studies focused more on the relationship between endorsers and products. For example, the match-up theory was used to explore the influence of consistency between products and endorsers. But these studies often ignored the links between consumers and endorsers. This paper created a new influence path, starting from the source model and going through the consumer-endorser congruency, finally reaching the consumers' attitude. Thus, as an information source, the endorser can not only influence consumers' attitudes towards products through social influence but also influence their attitudes through the congruence of social identity.

10.5 Research Limitations

Although all scales used in this study have been verified, due to the early development of some scales, the same scale may cause certain measurement errors at different times and in different social environments. This dissertation does not consider other scales of influence and para-social interactions that are more in line with the current information dissemination environment. In the future study, it is necessary to make up for the shortcomings in this aspect and adjust the scales in combination with the actual situation to achieve the scale innovation based on research.

The data collection of this study is mainly achieved through online distribution of questionnaires, which has high requirements on respondents' consciousness. Therefore, online distribution of questionnaires is difficult to ensure the accuracy and authenticity of respondents' answers which is easy to cause distortion of sample content. In the future, in-depth interviews can be used to optimize the characteristics of research

dimensions. Experimental methods also can be used to collect data samples for dimensions requiring real-time measurement.

This dissertation adopted experimental method and distributed in the form of questionnaire. There were certain differences between the simulated scenes and environments of celebrity endorsement advertisements experienced by consumers. For consumers, a certain distance between the scene of celebrity endorsement advertisement in the experiment and the real scene would lead to a relatively low degree of involvement. Therefore, experimental environments with high authenticity should be simulated as much as possible in future studies.

The research targeted online celebrities as media figures with certain popularity and business behaviors in the perception of fans at the present stage. However, the emergence and development of online celebrities are staged and dynamic. The field of short video and live broadcasting also developed rapidly. Research on online celebrities limited to one stage cannot provide general guidance for practice. Future research can discuss the attributes, forms, and effects of different stages of online celebrity respectively and summarize the general law of constructive opinions for the industry.

There are many factors influencing consumers' attitude change and purchase, such as product-celebrity endorser interaction, involvement level, word of mouth etc. However, this dissertation only researched on PSI based on the context of interactive social media platform. For future study the other variable should be concluded.

10.6 Conclusions

The influence composition of online celebrity endorsement can be analyzed by the traditional celebrity endorsement theory. The expertise, credibility, and attractiveness of sources have a significant positive influence on the brand relationship between consumers and brands represented by online celebrities, among which the attractiveness effect of online celebrity endorsers is the most significant.

Para-social interaction has a moderating effect on the attractiveness of online celebrity endorsers and consumers' attitudes as well as purchase intentions. It can positively predict consumers' attitudes towards the endorsing brands.

This dissertation made a comparative analysis of online celebrity endorsers and traditional celebrity endorsers, and concluded that they had different influences under the two-way interaction. This dissertation has reference value for brand marketing practice in social network. According to the characteristics and preferences of consumers, this dissertation also provided targeted optimization suggestions for brands and online celebrities. On the one hand, online celebrities should strengthen their professional abilities while integrating diversified forms of interaction to meet the social needs of different groups of fans. On the other hand, brands need to properly screen online celebrity endorsers, pay attention to relationship marketing and value marketing. Brands should also use the influence of online celebrity endorsers to build

a relationship network, transform social relationship resources of consumers, pay attention to the integration of brand value image.

Reference

- Khatri, P. (2006). Celebrity endorsement: A strategic promotion perspective. *Indian media studies journal*, 1(1), 25-37.
- Fatmawati, I., & Permatasari, N. (2023). The Persuasive Effects of a Beauty Influencer of an Iconic Local Skincare Brand in Indonesia. In *The Implementation of Smart Technologies for Business Success and Sustainability* (pp. 465-475). Springer, Cham.
- Febriane, R. (2023). The Influences of Perceived Credibility and Consumer Attitude Towards Purchase Intention of Some by Mi's YouTube User Generated Content.
- Li, Y., Liu, B., & Xie, L. (2022). Celebrity endorsement in international destination marketing: Evidence from eye-tracking techniques and laboratory experiments. *Journal of Business Research*, 150, 553-566.
- Kumar, S., & Ramana, V. (2019). Celebrity endorsement, consumer based brand equity: A literature review. *International Journal of Management Studies*, 6(3), 54.
- Aguirre-Rodriguez, A., Bosnjak, M., & Sirgy, M. J. (2012). Moderators of the self-congruity effect on consumer decision-making: A meta-analysis. *Journal of Business Research*, 65(8), 1179-1188.
- Ahmadi, A., & Ieamsom, S. (2021). Influencer fit post vs celebrity fit post: which one engages Instagram users more? *Spanish Journal of Marketing-ESIC*.
- Ajzen, I., & Fishbein, M. (1975). A Bayesian analysis of attribution processes. *Psychological bulletin*, 82(2), 261
- Alsmadi, S. (2006). The Power of Celebrity Endorsement in Brand Choice Behavior: An Empirical Study of Consumer Attitudes. *Journal of Accounting, Business & Management*, 13.
- Amos, C., Holmes, G., & Strutton, D. (2008). Exploring the relationship between celebrity endorser effects and advertising effectiveness: A quantitative synthesis of effect size. *International Journal of Advertising*, 27(2), 209–234.
- Appelbaum, R. F., & Anatol, K. W. (1972). The factor structure of source credibility as a function of the speaking situation.
- Argyris, Y. A., Muqaddam, A., & Miller, S. (2021). The effects of the visual presentation of an Influencer's Extroversion on perceived credibility and purchase intentions—moderated by personality matching with the audience. *Journal of Retailing and Consumer Services*, 59, 102347
- Ashforth, B. E., & Mael, F. (1989). Social identity theory and the organization. *Academy of management review*, 14(1), 20-39.
- Atkin, C., & Block, M. (1983). Effectiveness of celebrity endorsers. *Journal of Advertising Research*, 23(1), 57–61.

- Auter, P. J., & Palmgreen, P. (2000). Development and validation of a parasocial interaction measure: The audience-persona interaction scale. *Communication Research Reports*, 17(1), 79-89.
- Aziz, S., Ghani, U., & Niazi, A. (2013). Impact of celebrity credibility on advertising effectiveness. *Pakistan Journal of Commerce and Social Sciences (PJCSS)*, 7(1), 107-127.
- Babutsidze, Z. (2018). The rise of electronic social networks and implications for advertisers. *Technological Forecasting and Social Change*, 137, 27-39.
- Bagozzi, R. P., & Dholakia, U. M. (2006). Antecedents and purchase consequences of customer participation in small group brand communities. *International Journal of research in Marketing*, 23(1), 45-61.
- Baker, M. J., & Churchill Jr, G. A. (1977). The impact of physically attractive models on advertising evaluations. *Journal of Marketing research*, 14(4), 538-555.
- Ballantine, P. W., & Martin, B. A. (2005). Forming parasocial relationships in online communities. *ACR North American Advances*
- Balog, K., De Rijke, M., & Weerkamp, W. (2008, July). Bloggers as experts: feed distillation using expert retrieval models. In *Proceedings of the 31st annual international ACM SIGIR conference on Research and development in information retrieval* (pp. 753-754).
- Bandura, A. (2009). Social cognitive theory of mass communication. In *Media effects* (pp. 110-140). Routledge.
- Bartz, S., Molchanov, A., & Stork, P. A. (2013). When a celebrity endorser is disgraced: A twenty-five-year event study. *Marketing Letters*, 24(2), 131-141.
- Behm-Morawitz, E. (2013). Mirrored selves: The influence of self-presence in a virtual world on health, appearance, and well-being. *Computers in human Behavior*, 29(1), 119-128.
- Belanche, D., Casaló, L. V., Flavián, M., & Ibáñez-Sánchez, S. (2021). Understanding influencer marketing: The role of congruence between influencers, products and consumers. *Journal of Business Research*, 132, 186-195.
- Belch, G. E., & Belch, M. A. (2004). *Advertising and promotion: An integrated marketing communications perspective* 6th. New York: McGraw-Hill.
- Belch, M. A., & Belch, G. E. (2013). The future of creativity in advertising. *Journal of Promotion Management*, 19(4), 395-399.
- Belk, R. W. (1988). Possessions and the extended self. *Journal of consumer research*, 15(2), 139-168.
- Bentler, P. M., & Bonett, D. G. (1980). Significance tests and goodness of fit in the analysis of covariance structures. *Psychological bulletin*, 88(3), 588.
- Bergkvist, L., & Zhou, K. Q. (2016). Celebrity endorsements: a literature review and research agenda. *International journal of advertising*, 35(4), 642-663.
- Berlo, D. K., Lemert, J. B., & Mertz, R. J. (1969). Dimensions for evaluating the acceptability of message sources. *Public opinion quarterly*, 33(4), 563-576.

- Bhattacharjee, A., & Sanford, C. (2006). Influence processes for information technology acceptance: An elaboration likelihood model. *MIS quarterly*, 805-825.
- Biocca, F., Harms, C., & Burgoon, J. K. (2003). Toward a more robust theory and measure of social presence: Review and suggested criteria. *Presence: Teleoperators & virtual environments*, 12(5), 456-480.
- Biswas, D., Biswas, A., & Das, N. (2006). The differential effects of celebrity and expert endorsements on consumer risk perceptions. The role of consumer knowledge, perceived congruency, and product technology orientation. *Journal of advertising*, 35(2), 17-31.
- Bjerke, R., & Polegato, R. (2006). How well do advertising images of health and beauty travel across cultures? A self-concept perspective. *Psychology & Marketing*, 23(10), 865-884.
- Bland, J. M., & Altman, D. G. (1997). Statistics notes: Cronbach' s alpha. *BMJ*, 314(7080), 572.
- Boerman S.C., van Reijmersdal E.A. (2019), "Disclosing Influencer Marketing on YouTube to Children: The Moderating Role of Para-Social Relationship," *Frontiers in Psychology*, 10, 3042.
- Brade, J., Lorenz, M., Busch, M., Hammer, N., Tscheligi, M., & Klimant, P. (2017). Being there again—Presence in real and virtual environments and its relation to usability and user experience using a mobile navigation task. *International Journal of Human-Computer Studies*, 101, 76-87.
- Briñol, P., & Petty, R. E. (2012). A history of attitudes and persuasion research. In *Handbook of the history of social psychology* (pp. 283-320). Psychology Press.
- Brown, D., & Hayes, N. (2008). *Influencer marketing*. Routledge.
- Brown, W. J., & Basil, M. D. (2010). Parasocial interaction and identification: Social change processes for effective health interventions. *Health communication*, 25(6-7), 601-602.
- Bu, Y., Parkinson, J., & Thaichon, P. (2022). Influencer marketing: Homophily, customer value co-creation behaviour and purchase intention. *Journal of Retailing and Consumer Services*, 66, 102904.
- Buhr, T. A., Simpson, T. L., & Pryor, B. (1987). Celebrity endorsers' expertise and perceptions of attractiveness, likability, and familiarity. *Psychological Reports*, 60(3_part_2), 1307-1309.
- Burnett, M. S., & Lunsford, D. A. (1994). Conceptualizing guilt in the consumer decision-making process. *Journal of Consumer Marketing*.
- Caballero, M. J., & Pride, W. M. (1984). Selected effects of salesperson sex and attractiveness in direct mail advertisements. *Journal of Marketing*, 48(1), 94-100.

- Caballero, M. J., Lumpkin, J. R., & Madden, C. S. (1989). Using Physical Attractiveness as an Advertising Tool: An Empirical Test of the Attraction Phenomenon. *Journal of Advertising Research*.
- Campbell, M. C., & Warren, C. (2012). A risk of meaning transfer: Are negative associations more likely to transfer than positive associations? *Social influence*, 7(3), 172-192.
- Casaló, L. V., Flavián, C., & Ibáñez-Sánchez, S. (2020). Influencers on Instagram: Antecedents and consequences of opinion leadership. *Journal of business research*, 117, 510-519.
- Chaiken, S. (1979). Communicator physical attractiveness and persuasion. *Journal of Personality and social Psychology*, 37(8), 1387.
- Chapple, C., & Cownie, F. (2017). An investigation into viewers' trust in and response towards disclosed paid-for endorsements by YouTube lifestyle Vloggers. *Journal of promotional communications*, 5(2).
- Chatman, J. A. (1989, August). Matching people and organizations: Selection and socialization in public accounting firms. In *Academy of Management proceedings* (Vol. 1989, No. 1, pp. 199-203). Briarcliff Manor, NY 10510: Academy of Management.
- Che S.Y., Sheng G.H., Lin Z.N. (2019) The effect of “brand-celebrity blogger” fit type on consumers' brand attitude Research on improving the degree and quality of interaction [J]. *Soft Science*, (5).
- Chen Y.Y. (2020). Factors driving the boom of “Online celebrity economy”. *Commercial Information*, No.193(03), 158-159.
- Childers, C. C., Lemon, L. L., & Hoy, M. G. (2019). # Sponsored# Ad: Agency perspective on influencer marketing campaigns. *Journal of Current Issues & Research in Advertising*, 40(3), 258-274.
- Choi, S. M., & Rifon, N. J. (2012). It is a match: The impact of congruence between celebrity image and consumer ideal self on endorsement effectiveness. *Psychology & marketing*, 29(9), 639-650.
- Chung, S., & Cho, H. (2017). Fostering parasocial relationships with celebrities on social media: Implications for celebrity endorsement. *Psychology & Marketing*, 34(4), 481-495.
- Cohen, J. B., & Golden, E. (1972). Informational social influence and product evaluation. *Journal of applied Psychology*, 56(1), 54.
- Colliander, J., & Dahlén, M. (2011). Following the fashionable friend: The power of social media: Weighing publicity effectiveness of blogs versus online magazines. *Journal of advertising research*, 51(1), 313-320.
- Conway, J. C., & Rubin, A. M. (1991). Psychological predictors of television viewing motivation. *Communication Research*, 18(4), 443-463.
- Craig, C. S., & McCann, J. (1978). Impact of persuasive communications on energy conservation. *Energy Syst. Policy*; (United States), 2(4).

- De Veirman, M., Cauberghe, V., & Hudders, L. (2017). Marketing through Instagram influencers: the impact of number of followers and product divergence on brand attitude. *International journal of advertising*, 36(5), 798-828.
- Debevec, K., & Kernan, J. B. (1984). More evidence on the effects of a presenter's attractiveness some cognitive, affective, and behavioral consequences. *ACR North American Advances*.
- DeSarbo, W. S., & Harshman, R. A. (1985). Celebrity-brand congruence analysis. *Current issues and research in advertising*, 8(1), 17-52.
- Ding H.Q., & Wang Y.P., (2010). Analysis of the characteristics of "key opinion leaders" in SNS network space: A Case study of Douban.com. *Journal of Journalism and Communication*, (3), 82-91.
- Djafarova, E., & Rushworth, C. (2017). Exploring the credibility of online celebrities' Instagram profiles in influencing the purchase decisions of young female users. *Computers in human behavior*, 68, 1-7.
- Djafarova, E., & Trofimenko, O. (2019). 'Instafamous' –credibility and self-presentation of micro-celebrities on social media. *Information, communication & society*, 22(10), 1432-1446.
- Duthie, E., Veríssimo, D., Keane, A., & Knight, A. T. (2017). The effectiveness of celebrities in conservation marketing. *PloS one*, 12(7), e0180027.
- Dwivedi, A., Johnson, L. W., & McDonald, R. E. (2015). Celebrity endorsement, self-brand connection and consumer-based brand equity. *Journal of Product & Brand Management*.
- Einwiller, S. A., Fedorikhin, A., Johnson, A. R., & Kamins, M. A. (2006). Enough is enough! When identification no longer prevents negative corporate associations. *Journal of the Academy of Marketing Science*, 34(2), 185-194.
- El Hedhli, K., Zourrig, H., & Becheur, I. (2021). Celebrity endorsements: Investigating the interactive effects of internalization, identification and product type on consumers' attitudes and intentions. *Journal of Retailing and Consumer Services*, 58, 102260.
- Erden, T., & Swait, J. (2004). Brand credibility, brand consideration, and choice. *Journal of consumer research*, 31(1), 191-198.
- Erdogan, B. Z. (1999). Celebrity endorsement: A literature review. *Journal of marketing management*, 15(4), 291-314.
- Erdogan, B. Z., Baker, M. J., & Tagg, S. (2001). Selecting celebrity endorsers: The practitioner's perspective. *Journal of Advertising Research*, 41(3), 39-48.
- Erkan, I., & Evans, C. (2018). Social media or shopping websites? The influence of eWOM on consumers' online purchase intentions. *Journal of Marketing Communications*, 24(6), 617-632.
- Erz, A., & Christensen, A. B. H. (2018). Transforming consumers into brands: Tracing transformation processes of the practice of blogging. *Journal of Interactive Marketing*, 43, 69-82.

- Evans, N. J., Phua, J., Lim, J., & Jun, H. (2017). Disclosing Instagram influencer advertising: The effects of disclosure language on advertising recognition, attitudes, and behavioral intent. *Journal of interactive advertising*, 17(2), 138-149.
- Fern, Y. S., Boon, L. K., Ling, G. M., & Huat, T. S. (2015). The effect of celebrity endorser towards customer purchase intention. *Advanced Science Letters*, 21(6), 2163-2165.
- Fisher, M. E. (1962). Relation between the specific heat and susceptibility of an antiferromagnet. *Philosophical Magazine*, 7(82), 1731-1743.
- Fiske, S. T., & Pavelchak, M. A. (1986). Category-based versus piecemeal-based affective responses: Developments in schema-triggered affect.
- Fogg, B. J., Soohoo, C., Danielson, D. R., Marable, L., Stanford, J., & Tauber, E. R. (2003, June). How do users evaluate the credibility of Web sites? A study with over 2,500 participants. In *Proceedings of the 2003 conference on Designing for user experiences* (pp. 1-15).
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of marketing research*, 18(1), 39-50.
- Freiden, J. B. (1984). Advertising spokesperson effects-An examination of endorser type and gender on 2 audiences. *Journal of advertising research*, 24(5), 33-41.
- Friedman, H. H., & Friedman, L. (1979). Endorser effectiveness by product type. *Journal of advertising research*.
- Friedman, H. H., Santeramo, M. J., & Traina, A. (1978). Correlates of trustworthiness for celebrities. *Journal of the Academy of Marketing Science*, 6(4), 291-299.
- Friedrich Kasiski. *Secret writing and the Art of Deciphering*. E. S. Mittler und Sohn, Kingdom of Prussia, 1863.
- Gamson, J. (2011). The unwatched life is not worth living: The elevation of the ordinary in celebrity culture. *Pmla*, 126(4), 1061-1069.
- Gannon, V., & Prothero, A. (2016). Beauty blogger selfies as authenticating practices. *European Journal of Marketing*.
- Gannon, V., & Prothero, A. (2018). Beauty bloggers and YouTubers as a community of practice. *Journal of Marketing Management*, 34(7-8), 592-619.
- Gardner, B. B., & Levy, S. J. (1999). The product and the brand. *Sidney J.*
- Gardner, M. (1978). Mathematical games. *Scientific American*, 239(2), 18-25.
- Gefen, D., & Straub, D. W. (2003). Consumer trust in B2C e-Commerce and the importance of social presence: experiments in e-Products and e-Services. *Omega*, 32(6), 407-424.
- Gilly, M. C., Graham, J. L., Wolfinbarger, M. F., & Yale, L. J. (1998). A dyadic study of interpersonal information search. *Journal of the academy of marketing science*, 26(2), 83-100.

- Goldberg, M. E., & Hartwick, J. (1990). The effects of advertiser reputation and extremity of advertising claim on advertising effectiveness. *Journal of consumer research*, 17(2), 172-179.
- Goldsmith, R. E., Lafferty, B. A., & Newell, S. J. (2000). The impact of corporate credibility and celebrity credibility on consumer reaction to advertisements and brands. *Journal of advertising*, 29(3), 43-54.
- Gong, W., & Li, X. (2017). Engaging fans on microblog: the synthetic influence of parasocial interaction and source characteristics on celebrity endorsement. *Psychology & Marketing*, 34(7), 720-732.
- Gu, L.Q., & Gao, Y.L., (2020). Research on the influence of Vlogger on consumers' purchase intention -- With quasi-social interaction as the intermediary. *Business times*.
- Guruge, M. C. (2018). Comparison between attributes related to celebrity endorsement and social media influencer marketing: A conceptual review. *Sri Lanka Journal of Marketing*, 4(1), 17-37.
- Hair, J. F. (2009). *Multivariate data analysis*.
- Hair, J. F., Ortinau, D. J., & Harrison, D. E. (2010). *Essentials of marketing research* (Vol. 2). New York, NY: McGraw-Hill/Irwin.
- Hair, J. F., Ringle, C. M., & Sarstedt, M. (2012). Partial least squares: the better approach to structural equation modeling? *Long range planning*, 45(5-6), 312-319.
- Harmon, R. R., & Coney, K. A. (1982). The persuasive effects of source credibility in buy and lease situations. *Journal of Marketing research*, 19(2), 255-260.
- Hartmann, T., & Goldhoorn, C. (2011). Horton and Wohl revisited: Exploring viewers' experience of parasocial interaction. *Journal of communication*, 61(6), 1104-1121.
- Hautz, J., Füller, J., Hutter, K., & Thürridl, C. (2014). Let users generate your video ads? The impact of video source and quality on consumers' perceptions and intended behaviors. *Journal of Interactive Marketing*, 28(1), 1-15.
- Hayes, A. F. (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. *Communication monographs*, 76(4), 408-420.
- Heath, T. B., & Gaeth, G. J. (1994). *Theory and Method in the Study. Attention, Attitude, and Affect in Response to Advertising*, 125.
- Hisashi Masuda, Spring H. Han, Jungwoo Lee, Impacts of influencer attributes on purchase intentions in social media influencer marketing: Mediating roles of characterizations, *Technological Forecasting and Social Change*, Volume 174,
- Hoffner, C., & Buchanan, M. (2005). Young adults' wishful identification with television characters: The role of perceived similarity and character attributes. *Media psychology*, 7(4), 325-351.
- Hogg, M. A., & Reid, S. A. (2006). Social identity, self-categorization, and the communication of group norms. *Communication theory*, 16(1), 7-30.

- Hong, J. W., & Zinkhan, G. M. (1995). Self-concept and advertising effectiveness: The influence of congruency, conspicuousness, and response mode. *Psychology & Marketing*, 12(1), 53-77.
- Horai, J., Naccari, N., & Fatoullah, E. (1974). The effects of expertise and physical attractiveness upon opinion agreement and liking. *Sociometry*, 601-606.
- Horton, D., & Richard Wohl, R. (1956). Mass communication and para-social interaction: Observations on intimacy at a distance. *psychiatry*, 19(3), 215-229.
- Hosany, S., & Martin, D. (2012). Self-image congruence in consumer behavior. *Journal of Business Research*, 65(5), 685-691.
- Hovland, C. I., & Weiss, W. (1951). The influence of source credibility on communication effectiveness. *Public opinion quarterly*, 15(4), 635-650.
- Hovland, C. I., Janis, I. L., & Kelley, H. H. (1953). *Communication and persuasion*.
- Hu, L., Min, Q., Han, S., & Liu, Z. (2020). Understanding followers' stickiness to digital influencers: The effect of psychological responses. *International Journal of Information Management*, 54, 102169.
- Huang, R., & Sarigöllü, E. (2014). How brand awareness relates to market outcome, brand equity, and the marketing mix. In *Fashion branding and consumer behaviors* (pp. 113-132). Springer, New York, NY.
- Huber, F., Vollhardt, K., Matthes, I., & Vogel, J. (2010). Brand misconduct: Consequences on consumer-brand relationships. *Journal of Business Research*, 63(11), 1113-1120.
- Hwang, K. and Zhang, Q. (2018), "Influence of parasocial relationship between digital celebrities and their followers on followers' purchase and electronic word-of-mouth intentions, and persuasion knowledge", *Computers in Human Behavior*, Vol. 87, pp. 155-173.
- Igartua, J. J., & Hayes, A. F. (2021). Mediation, moderation, and conditional process analysis: Concepts, computations, and some common confusions. *The Spanish Journal of Psychology*, 24.
- Jain, V., & Roy, S. (2016). Understanding meaning transfer in celebrity endorsements: a qualitative exploration. *Qualitative Market Research: An International Journal*.
- Jin, S. A. A., & Phua, J. (2014). Following celebrities' tweets about brands: The impact of twitter-based electronic word-of-mouth on consumers' source credibility perception, buying intention, and social identification with celebrities. *Journal of advertising*, 43(2), 181-195.
- Jin, S. V., & Ryu, E. (2020). "I'll buy what she's wearing": The roles of envy toward and parasocial interaction with influencers in Instagram celebrity-based brand endorsement and social commerce. *Journal of Retailing and Consumer Services*, 55, 102121.

- Johar, J. S., & Joseph Sirgy, M. (1989). Positioning models in marketing: toward a normative-integrated model. *Journal of Business and Psychology*, 3(4), 475-485.
- Joseph, W. B. (1982). The credibility of physically attractive communicators: A review. *Journal of advertising*, 11(3), 15-24.
- Kahai, S. S., & Cooper, R. B. (2003). Exploring the core concepts of media richness theory: The impact of cue multiplicity and feedback immediacy on decision quality. *Journal of management information systems*, 20(1), 263-299.
- Kahle, L. R., & Homer, P. M. (1985). Physical attractiveness of the celebrity endorser: A social adaptation perspective. *Journal of consumer research*, 11(4), 954-961.
- Kaikati, J. G. (1987). Celebrity advertising: A review and synthesis. *International Journal of Advertising*, 6(2), 93-105.
- Kalwani, M. U., & Silk, A. J. (1982). On the reliability and predictive validity of purchase intention measures. *Marketing Science*, 1(3), 243-286.
- Kamen, Joseph M., Azhari, Abdul C. and Kragh, Judith R (1975). "What a Spokesman Does for a Sponsor," *Journal of Advertising Research*, 15. April, pp. 17-24.
- Kamins, M. A. (1990). An investigation into the "match-up" hypothesis in celebrity advertising: when beauty may only be skin deep. *Journal of Advertising*, 19(1), 4-13.
- Kamins, M. A., & Gupta, K. (1994). Congruence between spokesperson and product type: A match-up hypothesis perspective. *Psychology and Marketing*, 11(6), 569-586.
- Kanungo, R. N., & Pang, S. (1973). Effects of human models on perceived product quality. *Journal of Applied Psychology*, 57(2), 172.
- Kay, S., Mulcahy, R., & Parkinson, J. (2020). When less is more: the impact of macro and micro social media influencers' disclosure. *Journal of Marketing Management*, 36(3-4), 248-278.
- Kellaris, J. J., Cox, A. D., & Cox, D. (1993). The effect of background music on ad processing: A contingency explanation. *Journal of Marketing*, 57(4), 114-125.
- Keller, J., & Ringrose, J. (2015). 'But then feminism goes out the window!': exploring teenage girls' critical response to celebrity feminism. *Celebrity studies*, 6(1), 132-135.
- Kelman H. C. (1961). Processes of opinion change. *Public Opin. Q.* 25:57-78
- Kelman, H. C. (2006). Interests, Relationships, Identities: Three. *Annu. Rev. Psychol.*, 57, 1-26.
- Kim, D. Y., & Kim, H. Y. (2021). Trust me, trust me not: A nuanced view of influencer marketing on social media. *Journal of Business Research*, 134, 223-232.
- Kim, M., & Kim, J. (2020). How does a celebrity make fans happy? Interaction between celebrities and fans in the social media context. *Computers in Human Behavior*, 111, 106419.

- Kim, S. J., Bickart, B. A., Brunel, F. F., & Pai, S. (2012). Can your business have 1 million friends? Understanding and Using Blogs as one-to-one mass media. *Understanding and Using Blogs as One-to-One Mass Media* (April 17, 2012). Boston U. School of Management Research Paper, (2012-13)
- Knoll, J., Schramm, H., Schallhorn, C., & Wynistorf, S. (2015). Good guy vs. bad guy: The influence of parasocial interactions with media characters on brand placement effects. *International Journal of Advertising*, 34(5), 720-743.
- Kressmann, F., Sirgy, M. J., Herrmann, A., Huber, F., Huber, S., & Lee, D. J. (2006). Direct and indirect effects of self-image congruence on brand loyalty. *Journal of Business research*, 59(9), 955-964.
- Lafferty, B. A., & Goldsmith, R. E. (1999). Corporate credibility's role in consumers' attitudes and purchase intentions when a high versus a low credibility endorser is used in the ad. *Journal of business research*, 44(2), 109-116.
- Lafferty, B. A., Goldsmith, R. E., & Newell, S. J. (2002). The dual credibility model: The influence of corporate and endorser credibility on attitudes and purchase intentions. *Journal of marketing theory and practice*, 10(3), 1-11.
- Lai, A. W. (1995). Consumer values, product benefits and customer value: a consumption behavior approach. *ACR North American Advances*.
- Lastovicka, J. L., & Gardner, M. G. (1978). Components of Involvement Attitude Research Plays for High Stakes, J.L. Maloney and B. Silverman, eds. American Marketing Association, Chicago.
- Lee E, OVERBY J. Creating value for online shoppers: implications for satisfaction and loyalty[J]. *Journal of consumer satisfaction*, 2004(5):54-67.
- Lee, J. A., & Eastin, M. S. (2020). I like what she's endorsing: The impact of female social media influencers' perceived sincerity, consumer envy, and product type. *Journal of Interactive Advertising*, 20(1), 76-91.
- Lee, J. E., & Watkins, B. (2016). YouTube vloggers' influence on consumer luxury brand perceptions and intentions. *Journal of Business Research*, 69(12), 5753-5760.
- Leung, X. Y., Sun, J., & Asswailem, A. (2022). Attractive females versus trustworthy males: Explore gender effects in social media influencer marketing in Saudi restaurants. *International Journal of Hospitality Management*, 103, 103207.
- Levy, S.J. (1959), "Symbols for sale", *Harvard Business Review*, Vol. 37, pp. 117-24.
- Li, Y., Liu, B., & Xie, L. (2022). Celebrity endorsement in international destination marketing: Evidence from eye-tracking techniques and laboratory experiments. *Journal of Business Research*, 150, 553-566
- Liu, S., Jiang, C., Lin, Z., Ding, Y., Duan, R., & Xu, Z. (2015). Identifying effective influencers based on trust for electronic word-of-mouth marketing: A domain-aware approach. *Information sciences*, 306, 34-52.
- Lou, C., & Yuan, S. (2019). Influencer marketing: how message value and credibility affect consumer trust of branded content on social media. *Journal of Interactive Advertising*, 19(1), 58-73.

- Lu, B., & Chen, Z. (2021). Live streaming commerce and consumers' purchase intention: An uncertainty reduction perspective. *Information & Management*, 58(7), 103509.
- Ma, Q., Qian, D., Hu, L., & Wang, L. (2017). Hello handsome! Male's facial attractiveness gives rise to female's fairness bias in Ultimatum Game scenarios - An ERP study. *PloS one*, 12(7), e0180459.
- Lutz, R. J., & Mackenzie, S. B. (1989). An empirical examination of the structural antecedents of attitude toward the ad in an advertising pretesting context. *Journal of Marketing Research*, 53, 48-65.
- Ma, Q., Qian, D., Hu, L., & Wang, L. (2017). Hello handsome! Male's facial attractiveness gives rise to female's fairness bias in Ultimatum Game scenarios - An ERP study. *PloS one*, 12(7), e0180459.
- MacInnis, D. J., & Jaworski, B. J. (1989). Information processing from advertisements: Toward an integrative framework. *Journal of marketing*, 53(4), 1-23.
- MacInnis, D. J., Rao, A. G., & Weiss, A. M. (2002). Assessing when increased media weight of real-world advertisements helps sales. *Journal of Marketing Research*, 39(4), 391-407.
- MacKenzie, S. B., Lutz, R. J., & Belch, G. E. (1986). The role of attitude toward the ad as a mediator of advertising effectiveness: A test of competing explanations. *Journal of marketing research*, 23(2), 130-143.
- Maddux, J. E., & Rogers, R. W. (1980). Effects of source expertness, physical attractiveness, and supporting arguments on persuasion: A case of brains over beauty. *Journal of personality and social psychology*, 39(2), 235.
- Madrigal, R. (2000). The influence of social alliances with sports teams on intentions to purchase corporate sponsors' products. *Journal of advertising*, 29(4), 13-24.
- Marquardt, D. W. (1970). Generalized inverses, ridge regression, biased linear estimation, and nonlinear estimation. *Technometrics*, 12(3), 591-612.
- McCracken, G. (1989). Who is the celebrity endorser? Cultural foundations of the endorsement process. *Journal of consumer research*, 16(3), 310-321.
- McCroskey, J. C. (1966). Scales for the measurement of ethos.
- McGinnis, E., & Ward, C. D. (1980). „Mai bine iubit decât potrivit: încredere și expertiză ca factori ai credibilității”. *Personality and Social Psychology Bulletin*, 6(3), 467-472.
- McGuire, W. J. (1968). Personality and attitude change: An information-processing theory. *Psychological foundations of attitudes*, 171, 196.
- McGuire, W. J., (1985), “Attitudes and attitude change”, *Handbook of Social Psychology*, vol.2
- Men, L. R., & Tsai, W. H. S. (2016). Public engagement with CEOs on social media: Motivations and relational outcomes. *Public Relations Review*, 42(5), 932-942.
- Menon, K., Boone, L. E., & Rogers, H. P. (2001). Celebrity Advertising: An assessment of its relative effectiveness. Unpublished manuscript.

- Metzger, M. J. (2007). Making sense of credibility on the Web: Models for evaluating online information and recommendations for future research. *Journal of the American society for information science and technology*, 58(13), 2078-2091.
- Metzger, M. J., & Flanagin, A. J. (2013). Credibility and trust of information in online environments: The use of cognitive heuristics. *Journal of pragmatics*, 59, 210-220.
- Miciak, A. R., & Shanklin, W. L. (1994). Choosing celebrity endorsers. *Marketing Management*, 3(3), 50.
- Mills, J., & Harvey, J. (1972). Opinion changes as a function of when information about the communicator is received and whether he is attractive or expert. *Journal of Personality and Social Psychology*, 21(1), 52.
- Mitchell, A. A., & Olson, J. C. (1981). Are product attribute beliefs the only mediator of advertising effects on brand attitude? *Journal of marketing research*, 18(3), 318-332.
- Mittal, B., & Lee, M. S. (1989). A causal model of consumer involvement. *Journal of economic psychology*, 10(3), 363-389.
- Monge-Benito, S., Elorriaga-Illera, A., & Olabarri-Fernández, E. (2020). YouTube celebrity endorsement: audience evaluation of source attributes and response to sponsored content. A case study of influencer Verdeliss. *Communication & Society*, 33(3), 149-166.
- Moore, D. L., Hausknecht, D., & Thamodaran, K. (1986). Time compression, response opportunity, and persuasion. *Journal of Consumer Research*, 13(1), 85-99.
- Morgan, R. M., & Hunt, S. D. (1994). The commitment-trust theory of relationship marketing. *Journal of marketing*, 58(3), 20-38.
- Mowen, J. C., & Brown, S. W. (1981). On explaining and predicting the effectiveness of celebrity endorsers. *ACR North American Advances*.
- Moyer-Gusé, E., & Nabi, R. L. (2010). Explaining the effects of narrative in an entertainment television program: Overcoming resistance to persuasion. *Human communication research*, 36(1), 26-52.
- Müller, L., Mattke, J., & Maier, C. (2018). # Sponsored# ad: exploring the effect of influencer marketing on purchase intention.
- Noort, G.V., Voorveld, H.A.M. and Reijmersdal, E.A.V. (2012), "Interactivity in brand web sites: cognitive, affective, and behavioral responses explained by consumers' online flow experience", *Journal of Interactive Marketing*, Vol. 26 No. 4, pp. 223-234.
- Ohanian, R. (1990). Construction and validation of a scale to measure celebrity endorsers' perceived expertise, trustworthiness, and attractiveness. *Journal of advertising*, 19(3), 39-52.
- Ohanian, R. (1991). The impact of celebrity spokespersons' perceived image on consumers' intention to purchase. *Journal of advertising Research*.
- Pan, T. (2015). The influence of social interaction between brand microblog and visitors on brand relationship. *Market Research* (4), 4.

- Park, C. W., Jaworski, B. J., & MacInnis, D. J. (1986). Strategic brand concept-image management. *Journal of marketing*, 50(4), 135-145.
- Park, H. J., & Lin, L. M. (2020). The effects of match-ups on the consumer attitudes toward internet celebrities and their live streaming contents in the context of product endorsement. *Journal of Retailing and Consumer Services*, 52, 101934.
- Park, M., & Yoo, J. (2020). Effects of perceived interactivity of augmented reality on consumer responses: A mental imagery perspective. *Journal of Retailing and Consumer Services*, 52, 101912.
- Patzer, G. L. (1983). Source credibility as a function of communicator physical attractiveness. *Journal of business research*, 11(2), 229-241.
- Petroshius, S. M., & Crocker, K. E. (1989). An empirical analysis of spokesperson characteristics on advertisement and product evaluation. *Journal of the Academy of Marketing Science*, 17, 217–225.
- Petty, R. E., & Brinol, P. (2008). Persuasion: From single to multiple to metacognitive processes. *Perspectives on Psychological Science*, 3(2), 137-147.
- Petty, R. E., Cacioppo, J. T., & Goldman, R. (1981). Personal involvement as a determinant of argument-based persuasion. *Journal of personality and social psychology*, 41(5), 847.
- Phua, J., Lin, J. S. E., & Lim, D. J. (2018). Understanding consumer engagement with celebrity-endorsed E-Cigarette advertising on instagram. *Computers in Human Behavior*, 84, 93-102
- Primack, B. A., Shensa, A., Escobar-Viera, C. G., Barrett, E. L., Sidani, J. E., Colditz, J. B., & James, A. E. (2017). Use of multiple social media platforms and symptoms of depression and anxiety: A nationally-representative study among US young adults. *Computers in human behavior*, 69, 1-9.
- Pringle, H., & Binet, L. (2005). How marketers can use celebrities to sell more effectively. *Journal of Consumer Behaviour: An International Research Review*, 4(3), 201-214.
- Reinikainen, H., Munnukka, J., Maity, D., & Luoma-aho, V. (2020). ‘You really are a great big sister’ –parasocial relationships, credibility, and the moderating role of audience comments in influencer marketing. *Journal of marketing management*, 36(3-4), 279-298.
- Reno, R. R., Cialdini, R. B., & Kallgren, C. A. (1993). The transsituational influence of social norms. *Journal of personality and social psychology*, 64(1), 104.
- Rogers, E. M. (1961). *Bibliography on the Diffusion of Innovations*.
- Ross, S. A. (1973). The economic theory of agency: The principal’s problem. *The American economic review*, 63(2), 134-139.
- Roy Dholakia, R., & Sternthal, B. (1977). Highly credible sources: persuasive facilitators or persuasive liabilities? *Journal of Consumer research*, 3(4), 223-232.

- Roy, S., & Jain, V. (2016). The meaning transfer process in celebrity endorsements: A quantitative exploration. In *Let's Get Engaged! Crossing the Threshold of Marketing's Engagement Era* (pp. 539-544). Springer, Cham.
- Rubin, A. M., & Perse, E. M. (1987). Audience activity and soap opera involvement a uses and effects investigation. *Human communication research*, 14(2), 246-268
- Rubin, R. B., & McHugh, M. P. (1987). Development of parasocial interaction relationships.
- Rungruangjit, W. (2022). What drives Taobao live streaming commerce? The role of parasocial relationships, congruence and source credibility in Chinese consumers' purchase intentions. *Heliyon*, e09676.
- Sääksjärvi, M., Hellén, K., & Balabanis, G. (2016). Sometimes a celebrity holding a negative public image is the best product endorser. *European Journal of Marketing*.
- Sakib, M. N., Zolfagharian, M., & Yazdanparast, A. (2020). Does parasocial interaction with weight loss vloggers affect compliance? The role of vlogger characteristics, consumer readiness, and health consciousness. *Journal of Retailing and Consumer Services*, 52, 101733.
- Schiappa, E., Allen, M., & Gregg, P. B. (2007). Parasocial relationships and television: A meta-analysis of the effects. *Mass media effects research: Advances through meta-analysis*, 301-314.
- Schmidt, J. (2007). Blogging practices: An analytical framework. *Journal of computer-mediated communication*, 12(4), 1409-1427.
- Schouten, A. P., Janssen, L., & Verspaget, M. (2020). Celebrity vs. Influencer endorsements in advertising: the role of identification, credibility, and Product-Endorser fit. *International journal of advertising*, 39(2), 258-281.
- Sha, Z.Q., & Zhou, D.T., (2013). Social interaction between entrepreneurs and fans based on micro-blog. *Industrial Engineering and Management*, 18(5), 7.
- Shan, Y., Chen, K. J., & Lin, J. S. (2020). When social media influencers endorse brands: The effects of self-influencer congruence, parasocial identification, and perceived endorser motive. *International Journal of Advertising*, 39(5), 590-610.
- Shen, X., Wang, G.H., Yang, T.F., Zhong, S.Y., (2016). The development process, characteristics and countermeasures of the phenomenon of Online celebrity in China, *Journal of information science*, 35(11):93-98+65.
- Sherman, S. L., Jacobs, P. A., Morton, N. E., Froster-Iskenius, U., Howard-Peebles, P. N., Nielsen, K. B., ... & Watson, M. (1985). Further segregation analysis of the fragile X syndrome with special reference to transmitting males. *Human genetics*, 69(4), 289-299.
- Shin, K. A., & Han, M. (2019). Exploratory survey on factors involved in endorsement potentials of Youtube influencers: characteristics of influencers,

- characteristics of video contents, and para-social interactions. *Journal of Public Relations*, 23(5), 35-71.
- Shrivastava, A., Jain, G., Kamble, S. S., & Belhadi, A. (2021). Sustainability through online renting clothing: Circular fashion fueled by instagram micro-celebrities. *Journal of Cleaner Production*, 278, 123772.
- Sidney J. Levy on marketing. Thousand Oaks, Calif: Sage Publications, 131-141.
- Sirgy, M. J. (1982). Self-concept in consumer behavior: A critical review. *Journal of consumer research*, 9(3), 287-300.
- Sirgy, M. J., & Samli, A. C. (1985). A path analytic model of store loyalty involving self-concept, store image, geographic loyalty, and socioeconomic status. *Journal of the Academy of Marketing Science*, 13(3), 265-291.
- Sirgy, M. J., Grewal, D., Mangleburg, T. F., Park, J. O., Chon, K. S., Claiborne, C. B., ... & Berkman, H. (1997). Assessing the predictive validity of two methods of measuring self-image congruence. *Journal of the academy of marketing science*, 25(3), 229-241
- Sirgy, M. J., Johar, J. S., Samli, A. C., & Claiborne, C. B. (1991). Self-congruity versus functional congruity: Predictors of consumer behavior. *Journal of the Academy of Marketing Science*, 19(4), 363-375.
- Sirgy, M. J., Lee, D. J., Johar, J. Y., & Tidwell, J. (2008). Effect of self-congruity with sponsorship on brand loyalty. *Journal of Business Research*, 61(10), 1091-1097.
- Silvera, D. H., & Austad, B. (2004). Factors predicting the effectiveness of celebrity endorsement advertisements. *European Journal of marketing*.
- Sokolova, K., & Kefi, H. (2020). Instagram and YouTube bloggers promote it, why should I buy? How credibility and parasocial interaction influence purchase intentions. *Journal of retailing and consumer services*, 53, 101742.
- Sokolova, K., & Perez, C. (2021). You follow fitness influencers on YouTube. But do you actually exercise? How parasocial relationships, and watching fitness influencers, relate to intentions to exercise. *Journal of Retailing and Consumer Services*, 58, 102276.
- Solomon, M. R., Ashmore, R. D., & Longo, L. C. (1992). The beauty match-up hypothesis: Congruence between types of beauty and product images in advertising. *Journal of advertising*, 21(4), 23-34.
- Spears, N., & Singh, S. N. (2004). Measuring attitude toward the brand and purchase intentions. *Journal of current issues & research in advertising*, 26(2), 53-66.
- Speck, P. S., Schumann, D. W., & Thompson, C. (1988). Celebrity endorsements-scripts, schema and roles: Theoretical framework and preliminary tests. *ACR North American Advances*.
- Stafford, M. R., Spears, N. E., & Hsu, C. K. (2003). Celebrity images in magazine advertisements: An application of the visual rhetoric model. *Journal of current issues & research in advertising*, 25(2), 13-20.

- Stangor, C., & McMillan, D. (1992). Memory for expectancy-congruent and expectancy-incongruent information: A review of the social and social developmental literatures. *Psychological Bulletin*, 111(1), 42.
- Steenkamp, J. B. E., & Baumgartner, H. (1998). Assessing measurement invariance in cross-national consumer research. *Journal of consumer research*, 25(1), 78-90.
- Sternthal, B., Phillips, L. W., & Dholakia, R. (1978). The persuasive effect of scarce credibility: a situational analysis. *Public Opinion Quarterly*, 42(3), 285-314.
- Steuer, J. (1992). Defining virtual reality: Dimensions determining telepresence. *Journal of communication*, 42(4), 73-93.
- Stone, G., Joseph, M., & Jones, M. (2003). An exploratory study on the use of sports celebrities in advertising: A content analysis. *Sport Marketing Quarterly*, 12(2).
- Sukhdial, A., Aiken, D., & Kahle, L. (2002). Are You Old School?: A scale for measuring sports fans' old-school orientation. *Journal of Advertising Research*, 42(4), 71-81.
- Sun, J., Wang, X.X., (2019), Online celebrity and Internet celebrity economy: A review based on celebrity theory. *Foreign Economics and Management*, (4):18-30.
- Sun, Y., Wang, R., Cao, D., & Lee, R. (2021). Who are social media influencers for luxury fashion consumption of the Chinese Gen Z? Categorisation and empirical examination. *Journal of Fashion Marketing and Management: An International Journal*.
- Sundermann, G., & Munnukka, J. (2022). Hope You' re Not Totally Commercial! Toward a Better Understanding of Advertising Recognition' s Impact on Influencer Marketing Effectiveness. *Journal of Interactive Marketing*, 10949968221087256.
- Tajfel, H. (1972). Some developments in European social psychology. *European Journal of Social Psychology*.
- Tajfel, H., & Turner, J. C. (1986). The social identity theory of intergroup behavior. In S. Worchel & W. Austin (Eds.), *Psychology of intergroup relations* (pp. 7–24). Chicago, IL: Nelson Hall.
- Tajfel, H., & Turner, J. C. (2004). The social identity theory of intergroup behavior. In *Political psychology* (pp. 276-293). Psychology Press.
- Tedeschi, James T. (1972), *The Social Influence Processes*, Chicago: Aldine-Atherton.
- Thamaraiselvan, N., Arasu, B. S., & Inbaraj, J. D. (2017). Role of celebrity in cause related marketing. *International Review on Public and Nonprofit Marketing*, 14(3), 341-357.
- Thomson, M. (2006). Human brands: Investigating antecedents to consumers' strong attachments to celebrities. *Journal of marketing*, 70(3), 104-119.

- Thorson, K. S., & Rodgers, S. (2006). Relationships between blogs as eWOM and interactivity, perceived interactivity, and parasocial interaction. *Journal of Interactive Advertising*, 6(2), 5-44.
- Till, B. D., & Busler, M. (2000). The match- up hypothesis: physical attractiveness, expertise, and the role of fit on brand attitude, purchase intent and brand beliefs. *Journal of Advertising*, 29, 1–13.
- Till, B. D., & Shimp, T. A. (1998). Endorsers in advertising: The case of negative celebrity information. *Journal of advertising*, 27(1), 67-82.
- Trusov, M., Bucklin, R. E., & Pauwels, K. (2009). Effects of word-of-mouth versus traditional marketing: findings from an internet social networking site. *Journal of marketing*, 73(5), 90-102.
- Tsai, W. H. S., & Men, L. R. (2017). Consumer engagement with brands on social network sites: A cross-cultural comparison of China and the USA. *Journal of Marketing Communications*, 23(1), 2-21.
- Tuškej, U., & Podnar, K. (2018). Consumers’ identification with corporate brands: Brand prestige, anthropomorphism and engagement in social media. *Journal of product & brand management*.
- Uzunoglu, E., & Kip, S. M. (2014). Brand communication through digital influencers: Leveraging blogger engagement. *International journal of information management*, 34(5), 592-602.
- Von Mettenheim, W., & Wiedmann, K. P. (2021). Social Influencers and Healthy Nutrition–The Challenge of Overshadowing Effects and Uninvolved Consumers. *Journal of Food Products Marketing*, 27(8-9), 365-383.
- Wahab, H. K. A., Tao, M., Tandon, A., Ashfaq, M., & Dhir, A. (2022). Social media celebrities and new world order. What drives purchasing behavior among social media followers?. *Journal of Retailing and Consumer Services*, 68, 103076.
- Wang, D. f., & Yu, L. (2006). Psychological research and prospects of virtual social relations.
- Wang, S., & Liu, M. T. (2022). Celebrity endorsement in marketing from 1960 to 2021: a bibliometric review and future agenda. *Asia Pacific Journal of Marketing and Logistics*, (ahead-of-print).
- Wang, Y. S., Fan, Z. J., & Jiang, J. H. (2017). Word-of-mouth communication model based on Holling-II Functional Response Function. *Computer Engineering and Applications*, 53(19), 40-44.
- Weisberg, J., Te’ eni, D., & Arman, L. (2011). Past purchase and intention to purchase in e-commerce: The mediation of social presence and trust. *Internet research*.
- Whang, Y. O., Allen, J., Sahoury, N., & Zhang, H. (2004). Falling in love with a product: The structure of a romantic consumer-product relationship. *ACR North American Advances*.
- Whitehead Jr, J. L. (1968). Factors of source credibility. *Quarterly Journal of Speech*, 54(1), 59-63.

- Woodside, A. G., & Davenport Jr, J. W. (1974). The effect of salesman similarity and expertise on consumer purchasing behavior. *Journal of Marketing Research*, 11(2), 198-202.
- Wu, C., & Shaffer, D. R. (1987). Susceptibility to persuasive appeals as a function of source credibility and prior experience with the attitude object. *Journal of personality and social psychology*, 52(4), 677.
- Xiao, M., Wang, R., & Chan-Olmsted, S. (2018). Factors affecting YouTube influencer marketing credibility: a heuristic-systematic model. *Journal of media business studies*, 15(3), 188-213.
- Xu, X., & Pratt, S. (2018). Social media influencers as endorsers to promote travel destinations: an application of self-congruence theory to the Chinese Generation Y. *Journal of travel & tourism marketing*, 35(7), 958-972.
- Xu, Z., Islam, T., Liang, X., Akhtar, N., & Shahzad, M. (2021). 'I' m like you, and I like what you like' sustainable food purchase influenced by vloggers: A moderated serial-mediation model. *Journal of Retailing and Consumer Services*, 63, 102737.
- Ye, Q., Law, R., Gu, B., & Chen, W. (2011). The influence of user-generated content on traveler behavior: An empirical investigation on the effects of e-word-of-mouth to hotel online bookings. *Computers in Human behavior*, 27(2), 634-639.
- Yin, J., Zhang, Y. Y., (2006) Analysis of "Online celebrity" communication Phenomenon [J]. *News and Writing*, (09):64-66.
- Yoo, J. and Park, M. (2016), "The effects of e-mass customization on consumer perceived value, satisfaction, and loyalty toward luxury brands", *Journal of Business Research*, Vol. 69 No. 12, pp. 5775-5784.
- Yoo, W. S., Lee, Y., & Park, J. (2010). The role of interactivity in e-tailing: Creating value and increasing satisfaction. *Journal of retailing and consumer services*, 17(2), 89-96.
- Zachrisson, A., Sandell, K., Fredman, P., & Eckerberg, K. (2006). Tourism and protected areas: motives, actors and processes. *The International Journal of Biodiversity Science and Management*, 2(4), 350-358.
- Zafar, A. U., Qiu, J., Li, Y., Wang, J., & Shahzad, M. (2021). The impact of social media celebrities' posts and contextual interactions on impulse buying in social commerce. *Computers in Human Behavior*, 115, 106178.
- Zhang, H., Dong, Z.Q., & Wang, H.S., (2017). Scale development and empirical study on the influence of value co-creation of fashion influencers on design attributes of fashion products. *Journal of Management*, 14(9), 11
- Zhang, K.J., (2011). Research on the sources and interference factors of endorsement effectiveness. *Business Manager* (1X), 1.
- Zhang, Y., & Zuo, B. (2006). Self-esteem terror management theory. *Advances in Psychological Science*, 14(02), 273.

- Zheng, W.C., (2016) Characteristics of Internet celebrity 3.0 era and Audience Psychology [J]. *New Media Research*, (6):14-15.
- Zhou, F., Su, Q., & Mou, J. (2021). Understanding the effect of website logos as animated spokes characters on the advertising: A lens of parasocial interaction relationship. *Technology in Society*, 65, 101571.
- Zhou, Y.F., Zhang, T., & Chen, S.N., (2018). Social media communication of Internet celebrities and consumer sentiment orientation analysis: A Case study of I Online celebrity brand “Xicha”. *Business Economics and Management* (4), 11.
- Zhu, Y. Q., Amelina, D., & Yen, D. C. (2022). Celebrity endorsement and impulsive buying intentions in social commerce-The case of instagram in Indonesia: Celebrity endorsement. In *Research Anthology on Social Media Advertising and Building Consumer Relationships* (pp. 1401-1419). IGI Global.

!

Appendix

Appendix 1. List of Tables

Table 1. Definition of celebrity endorsement	6
Table 2. Different theory to explain the effectiveness of trustworthiness on consumer.....	9
Table 3. Different theory to explain the effectiveness of expertise on consumer.....	10
Table 4. Different theory to explain the effectiveness of attractiveness on consumer	12
Table 5. Types of online celebrity	14
Table 6. Different aspects between traditional celebrity endorsement and online celerity endorsement	16
Table 7. The effectiveness of online celebrity endorsement on consumers	19
Table 8. The effectiveness of online celebrity endorsement on brand	21
Table 9. Influential factors on PSI	23
Table 10. The effectiveness of PSI on effectiveness of celebrity endorsement.....	24
Table 11. The relation between PSI and source credibility in celebrity endorsement.....	24
Table 12. The relation between PSI and PSR in celebrity endorsement	25
Table 13. The content and process of Study 1	30
Table 14. The content and process of Study 2	31
Table 15. The content and process of Study 3	32
Table 16. Explanation of Reliability and Validity	33
Table 17. Explanation of the degree of fit	33
Table 18. Explanation of analyzing CB-SEM	34
Table 19. Measurement items for variables in Study 1	40
Table 20. Demographics of sample	41
Table 21. Reliability and validity of measurements	42
Table 22. Means, standard deviations, correlations, and discriminant validity	43
Table 23. Model fit of Study 1	43
Table 24. Direct path coefficient	44
Table 25. Indirect path coefficient	45
Table 26. Questionnaire on utilitarian value.....	51
Table 27. Measurement items for variables in Study 2	53
Table 28. Demographics of sample	54
Table 29. Reliability and validity analysis.....	55
Table 30. Means, standard deviations, correlations and discriminant validity	56
Table 31. Model fit of Study 2	56
Table 32. Direct path analysis.....	57
Table 33. Mediation analysis	57
Table 34. Model fit of constraint models.....	60
Table 35. Model fit of constraint models.....	61

Table 36. Model fit of constraint models.....	62
Table 37. Model fit of constraint models.....	63
Table 38. Model fit of constraint models in online group	65
Table 39. Model fit of constraint models in online group	65
Table 40. Model fit of constraint models in online group	67
Table 41. Multi-Group analysis of online group	67
Table 42. Model fit of constraint models in online group	69
Table 43. Model fit of constraint models in online group	69
Table 44. Model fit of constraint models in online group	70
Table 45. Multi-Group analysis in traditional group	71
Table 46. Measurements items of variables in Study 3	76
Table 47. Demographics of sample	78
Table 48. Reliability and validity analysis.....	78
Table 49. Means, standard deviations, correlations and discriminant validity	80
Table 50. Model fit of Study 3.....	80
Table 51. Path analysis	81
Table 52. Mediation analysis	82
Table 53. Model fit of constraint models.....	84
Table 54. Model fit of constraint models.....	85
Table 55. Model fit of constraint models.....	86
Table 56. Model fit Table of constraint models.....	87
Table 57. Multi-Group analysis	88

Appendix 2. List of Figures

Figure 1. Framework of the dissertation	3
Figure 2. Research objects on three studies	4
Figure 3. The Structure of The Dissertation	5
Figure 4. Conceptual Framework of Study 1	36
Figure 5. Path Loading & Structure Equation Model of Study 1	45
Figure 6. Conceptual Framework of Study 2.....	47
Figure 7. Conceptual Framework of Online type of PSI for Study 2	48
Figure 8. Conceptual Framework of Traditional type of PSI for Study 2	48
Figure 9. Path Loading & Structure Equation Model of Study 2	58
Figure 10. The analyzing process of moderation effect in general.....	59
Figure 11. The constrained path of Model 2.....	60
Figure 12. The constrained path of Model 3, Model 7 and Model 13	61
Figure 13. The constrained path of Model 4, Model 8 and Model 14	62
Figure 14. The constrained path of Model 5.....	63
Figure 15. The analyzing process of moderation effect in online PSI.....	64
Figure 16. The constrained path of Model 9,10,11,15,16,17.....	66
Figure 17. The analyzing process of moderation effect in traditional PSI	68
Figure 18. Conceptual Framework of Study 3.....	72
Figure 19. Path Loading & Structure Equation Model of Study 3	82
Figure 20. The analyzing process of moderation effect.....	83
Figure 21. The constrained path of Model 2.....	84
Figure 22. The constrained path of Model 3.....	85
Figure 23. The constrained path of Model 4.....	86
Figure 24. The constrained path of Model 5,6,7,8.....	87

Appendix 3. Questionnaire Distribution Platform – Wenjuanxing

This conceptual framework of the study 1 is based on the model of celebrity endorsement theory and for study 2 and study 3 we ran a situational stimuli test, adding the “PSI” as the moderator in the source model under the context of online celebrity endorsement. As for the study 3 and based on the survey in study 2 we add the “congruence” as mediator and PSI could moderate the relationship between congruence and attitude. In order to test the hypotheses and validate the proposed model for this study. Three online surveys were made on Wenjuanxing (WJX) website to collect the basic primary data from respondents who have some basic knowledge of online celebrity endorsers and use interactive social media platform in China on. The survey was designed based on previous studies that review above and then translated into Chinese and distributed online via a special online platform called Wenjuanxing (WJX).

WJX is the largest professional questionnaire platform in China. It not only has rich forms of the question set but also has an automatic checking logic system to make the questions more logical. WJX platform is characterized by random sample sources and real samples. On average, more than 10 million people fill out questionnaires on the platform every day, reaching nearly 300 million users every month. In addition to ensuring the diversity of sample composition, it can also ensure the quality of sample response. In addition, WJX also provides a variety of channels for questionnaire distribution and has a strong privacy protection system, which can better protect the personal information of respondents. The WJX platform can set conditions for validity samples according to the different needs of each survey, and select target groups to distribute questionnaires according to the set conditions. Moreover, the WJX platform also received much confirmation and support from universities domestic and overseas and has formed very good relationships with them. Based on this, we believe that the WJX platform is a very reliable and valid questionnaire distribution platform, based on our research object is the characteristic of Chinese, choosing the sample distribution platform is more advantageous to collect data.

As we introduced Chinese online celebrities in the previous section, online celebrities have become an emerging career in China and are widely known by people. Due to the popularity of commercial shopping platforms in China, it has become a very common thing for online celebrity endorsers to carry out advertising and information transmission on social media platforms and online shopping platforms.

Due to the fierce competition in the market, the current online celebrity endorsements not only have transparent purchase channels and guarantee of product quality but also have relatively more preferential prices. Therefore, Chinese consumers of all ages, with effort, refer to the information about products endorsed by online celebrities when deciding to buy products. Therefore, the Chinese consumers this study

choose to investigate could have a wider range of types and have a more detailed and comprehensive cognition of online celebrity endorsements, so the data of such a survey will be more authentic and reliable.

Appendix 4: Data Analysis Platform - AMOS Software Version 18

The three studies of the dissertation all use the AMOS Version 18 to do the data analysis. Amos, created by SPSS, is a popular model testing tool. It has several uses, but model testing and path analysis are two of its principal applications. The structural equation model can be quickly and simply established. There are several reasons to explain why it is the best choice.

AMOS is a strong software that incorporates nearly all of the current statistical approaches for structural equation modeling. It can build structural equation models with observational and latent variables (including path analysis and longitudinal data models) and then use it to implement regression analysis, factor analysis, and variance analysis, covariance analysis, etc. A series of routine statistical analyses, such as hypothesis testing, is also a breeze for AMOS. Amos offers the maximum likelihood of missing values. Amos will not miss a single item even if the data is incomplete, and it will automatically calculate the correct standard error and statistical calculations to reduce the estimation deviation. AMOS has always been fast to update and widely used. Versions of Amos are upgraded very quickly. Due to its ease of use and powerful statistical capabilities, Amos has a wide audience and a growing number of books that use it as a companion tool for explaining software in various fields. This has made Amos the mainstream software for structural equation modeling.