

An empirical research on female stereotyping in video game design

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Abstract—Researchers believe media effects theories have clear and definitively applied to the stereotype in media, and those gender stereotypes that appear in video games have involved certain levels of female materialized as well. These over underrepresented and hypersexualized female stereotypes shown in video games have ruined female self-confidence and self-esteem. This research is based on the central idea of user-centered design (UCD) for investigating natures of the female role model, and applies these natures to analyze the relationship matrix for designing female characters in game design. Two phases are included: 1) in-depth interview and relative weight analysis; 2) FQD and Concept refinement phase. The result delivers reversed and activate perspectives for the convention of gender stereotypes in game design. This research adapts a reversal thinking process to reverse the conventional process of female character design in video games. We harness a series of investigating criteria from the female role model, trying to analysis and understand the ideal natures they think a female would have. From understanding the ideal model female have, we then return those criteria to character design analysis, discriminate the relationship strength to manifest the important factors which would guide to design the ideal characters of a female. The object of the research is to activate the stereotypes existed in game designer conventional customs, to develop a holistic and justice standard to balance to female stereotype for the public.

Keywords—character design; video game; female stereotypes, female self-esteem

I. INTRODUCTION

According to the Game Developer Magazine's 2009 investigation, there are only 6% female designers in game design companies and 10% female artists [1]. It shows that the male is predominant in the game design work environment, and most games they design are for the male market. Many content analysis studies indicate female imagery in video games has been over Sexualized [2] [3] [4], especially some female characters have been designed for award or as a captive, this is female stereotypes extremely materialized examples [5] Glaubke and et al.'s (2001) also identifies that most feminized characters usually shown in video games have their bodies barely covered [6]. Further, Beasley and Standley (2002) found 70% of female characters in adult games (non-sexual), and 46% in youth games are showing their cleavages [7]. Also 86% of them are wearing a miniskirt or mini pants, and 48% bare their shoulders [8].

Many researches identified the negative impact of video games, such as the language of violence, aggressive behavior, and social deviation both in the long term and short term [9]

[10] [11] [12] [13]. Researchers believe media effects theories have clear and definitively applied the stereotype in media, and those gender stereotypes that appear in video games have certain levels of female materialized [14] [15]. These will frame the role of gender awareness and attract females to imitate those stereotypes, and deepen their self gender recognition [16] [17] [18]. Bessenoff and other researchers indicated similar manipulation has injected into video games [19] [20]. This over underrepresented and hypersexualized phenomenon has ruined female self-confidence and self-esteem [21] [22] [23] [24]. As proponents claim that personas are effective for describing users and user requirements because they increase empathy, focus, and communication, and help design teams avoid stereotypes [25] [26] [27] [28].

This research adapts a reversal thinking process to reverse the conventional process of female character design in video games. We harness a series of investigating criteria from the female role model, try to analysis and understand the ideal natures they think a female would have. From understanding the ideal model females have, then return those criteria to character design analysis, discriminate the relationship strength to manifest the important factors which would guide to design the ideal characters of a female. The object of the research is to activate the stereotypes existed in game designer conventional customs, to develop a holistic and justice standard to balance to female stereotype for the public. This research bases on the central idea of User-centered design (UCD), two phases are included: 1) in-depth interview and relative weight analysis; 2) FQD and Concept refinement phase.

II. IN-DEPTH INTERVIEW AND RELATIVE WEIGHT ANALYSIS

Firstly a ground theory approach is applied in this research. We firstly carry out an in-depth interview of 14 female subjects who are aged from 14-75, level of education from primary school to PhD degree; averagely cover over age and education division (TABLE I). This interview asks subjects to describe the female characters in their eyes of the perfect. 227 natures are classified. We sorted the 227 natures into 54 user requirements, categorized into five categories, and evaluate their relative weight (RW). These five categories and their average relative weight are personality (RW =1.582), interpersonal relationship (RW =1.944), image appearance (RW =1.234), social perception (RW =2.042) and professional competencies (RW =2.5032). The second phase of this process is a FQD and Concept refinement phase.

This QFD matrix here represents a set of design development tools that transfer the concepts of subjects' actual statements, technical requirements from the designers, and the comprehensive matrix to identify important activities and prioritize them, and to document information and decisions. The concept development phase is a relative importance ranking; it prepares a feasibility study and tries to find an optimal solution to the problem by satisfying the requirements and proposals of the female participators.

TABLE I. SUBJECTS IN IN-DEPTH INTERVIEW

ED AG	Primary school	Junior high school	Senior high school	Under-graduates	Graduated
~20	1	1			
20-29			1	2	
30-44			1	1	1
45-60	1	1	2		1
61~				1	

The research findings show the core values of the average mature woman tend to be the pursuit of noble human values, however these values are established on intellectual, professional achievement, intimate and harmonious relationship of every individual. As we can see the highest user requirements are centralized in “professional competencies” category, “has professional and stable income (RW =5.75)” and “competent (RW= 4.42)” are prominent the needs of having safe and secure life, dignity, and the ability to be free. In addition “interpersonal relationships (RW =3.54)”, “intimate family relationship (RW=3.10)” and “decent” (RW=3.10) also reveal the love and loved are essential needs for a female (TABLE II). Also positive and warm personality is desired, such as “optimistic and positive (RW=4.42). This relates to how females wish to open up their inner nature and connect it to the external world. On the other side, requirements like “body figure”, “slender”, and “luxurious dress” which engaged with female characteristic do not have marked importance as conventionally believed. This appears that the core value female desire is self-sufficiency, has power to love and be loved, and being respected. Those requirements from the material world or extra supplementary are actually for support female gain the former values. Once they have been fulfilled, exterior requirements are no longer urgent.

This response to many related researches indicates that role playing or immersion games, truly will provide a fantasy context and opportunity for players to give vent to their dissatisfaction with life, conflict and frustration, to meet the pent-up fantasies, and create a life for a player would comfortably fulfilled [29]. To establish self esteem and develop the self-identity attempt opportunity, players' self-identity affects off line behavior closely [30] [31] [32] [33] Thus if the demand for these required nature can be formed and created in games, through reinforcement of self identity, enhance awareness of self-value will help self-esteem in the first life.

	User requirements	Relative weight		User requirements	Relative weight
professional competencies	knowledgeable	2.65	relationship	affection	1.77
	energetic	2.21		devoted	1.33
	presentation skills	1.77		express oneself felicitously	1.77
	professional and stable income	5.75		integrity	3.10
	High EQ	1.77		principled	1.77
	learning capacity	2.21		independent	1.33
	competent	4.42		considerate	2.65
	Language Proficiency	0.44		interpersonal relationships	3.54
	worldview	1.33		kind	3.10
					Role model
social perception	Recreation & Leisure	1.77	personality	intimate family relationship	3.10
	patient	0.88		Showing great respect to elders	0.88
	Comfortable and carefree	2.65		generous	0.88
	sweet	3.10		optimistic and positive	4.42
	cherish	0.88		confident	2.21
	happiness	2.21		free	0.88
	dependable	2.21		humorous	2.65
	wise	2.65		shy	0.44
	aesthetic	0.44		filial piety	0.44
	temperament	2.65		mature	0.88
image appearance	attractive	1.33	self-love	0.88	
	slender	2.65	enthusiastic	3.10	
	body figure	0.88	content	0.44	
	luxurious dress	0.44	caring	2.21	
	dignified	0.88	modest	0.44	
	neat	0.44			
	beautiful	2.63			
	fair and clear	0.88			
	healthy	2.65			

TABLE II. SUBJECTS IN IN-DEPTH INTERVIEW

III. FQD AND CONCEPT REFINEMENT PHASE

In the Deployment of Quality Function House (FQD) and concept refinement phase, we cross compare user/female requirements (UR) from previous process and design requirements (DR) from two experienced character designers.

Quality Function Deployment (QFD) is a management framework and a systematic process for motivating a business to focus on customer needs [34]. This QFD matrix here represents a set of design development tools that transfer the concepts of users' actual statements, technical requirements from the designers, and the comprehensive matrix to identify important activities and prioritize them, and to document information and decisions [35].

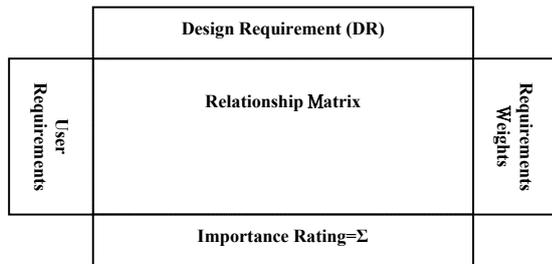


Figure 1. Example of a ONE-COLUMN figure caption.

In this matrix, relationships between female participators requirements, wishes, and ideal characters of female, and the design requirements from technical design specifications are deployed. It displays the relationship strength between subjects (user) and designer (TABLE III). We found “behavior ($\Sigma=195.29$)” is the most remarkable designer requirement, afterwards are “posture ($\Sigma=36.538$)”, “movement ($\Sigma=34.855$)”, and “facial expression ($\Sigma=33.080$)”. These four DR are more related with what the characters do rather than how they look like in games. The identification and belongingness from video games, do not establish on how sexual, pretty they are, but on how they participate in the games. Hence we can find that “color ($\Sigma=2.783$)”, “accessories ($\Sigma=2.990$)”, and “figure ($\Sigma=2.783$)” have no significance in the matrix. As the purpose of using FQD is to identify important activities and prioritize, we can sort the order of the designer requirement, which is 1) behavior, 2) posture, 3) movement, 4) facial expression, 5) dress, 6) voice, 7) hair style, 8) accessories, 9) 2 color, and 10) figure.

This matrix demonstrates two different dimensions of requirements, which have not been distinctively connected with. From this relationship matrix we can identify some important items which game and character designers should take priorities to fulfill their design. Furthermore, interpret these essential priorities and strengthen them into design strategies and decision of game design practice.

IV. CONCLUSION AND FUTURE STUDY

Retrace the hierarchy of needs from Maslow, His theories parallel many other theories of human developmental psychology, all of which focus on describing the stages of growth in humans [36]. It mutual proofs self-actualization is the highest level human would desire for. Maslow describes this desire as the desire to become more and more what one is, to become everything that one is capable of becoming; it is the full realization of one's potential. What if designers would create some proper games to support female players to accomplish their self-actualization, also help male players to

esteem female's nature and eradicate the sexual and materialized female stereotypes. Supply a reverse awareness to investigate what kind of characters, what kind of games are really desired for non-mainstream users, furthermore through the intersection of character design, to provide self-affirmation for females, and for all. As many video game designers have presumed that the majority of video games market is otaku, and otaku love to have sexual, and scantily-clad girls around them in their games [38]. Nevertheless nowadays female, young and old game players are rapidly increased; when video becomes a profoundly far-reaching media of public, we really need to break those biased female stereotypes, not just supply an acceptable or adequate female character. We need to cautiously consider what kind of characters appear in games in relation with meaningful game design, and in relation with a constructive and positive image of females. The results from this research mainly present a list of important activities and prioritize; renovate the conventional concept and procedure of game designing.

TABLE III. SUBJECTS IN IN-DEPTH INTERVIEW

	POSTURE	HAIR STYLE	COLOR	ACCESSORIES	VOICE	DRESS	FIGURE	MOVEMENT	FACIAL EXPRESSION	BEHAVIOR
RW	13.74	3.96	3.79	3.93	5.55	6.97	3.79	13.42	13.07	31.75
RTW	265.93	76.991	73.451	76.106	107.52	134.96	73.45	259.73	253.1	614.6
RR	3	9	8	9	5	6	7	2	4	1
IR=Σ	36.538	3.0488	2.783	2.990	5.967	9.406	2.783	34.855	33.080	195.29
RW=Relative Weight; Requirement Weight=RTW; Requirement Weight=RR; Importance Rating= IR; IR=(user requirement Relative Weigh ×design requirement Relative Weight)										

According to Eason (1995) this kind of combination is a mixture of two approaches, namely design by users and design for users. He also claimed that mixing the two approaches gives better results with higher success rates [39]. The result is a representation, it represents the female subjects by interpreting their real desires and proposals and matches them with designers own previous knowledge. This is a less personal and less subjective representation, because the designer is better informed on the real requirements and needs of the female participators. Designers can combine the information obtained from the first stage with his/her knowledge and findings in the field. A future research is designing now, by applying this result back to game design, and integrating with the concept of user-center design and participate design. Expect the result will strengthen into proper design practice.

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