

# The Depression and Creativity of Design-Major Students

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## ABSTRACT

In Taiwan, the rise of design industry recently has greatly increased the demand of design professionals. The design related departments has also been increased gradually. A designer's emotion can directly affect the design output, and designers with negative emotion may unconsciously project their negative emotion onto the design. The objective of the study is to discuss the association between design-major students with depressive tendency (DT) and their creativity. In this study, ten works from creators with DT and ten from creators without depressive tendency (NoDT) were examined by 123 subjects (as the audience) to explore the association between the creative works and emotional projection from the perspective of the audience. The result suggests that audience's preference and feeling of happiness of the 20 works are positively correlated. Those works making the audience happy are also liked, while those making the audience unhappy are disliked. Whether the audience has depression or not is not a factor affecting their perception of the works, but for creators, they would produce less liked works because of their depressive tendency.

**Keywords:** depression, creativity, design-major students, design education

## INTRODUCTION

Modern people lead a fast-paced life and stay tensed constantly because of the tremendous pressure from competition. As a result, more and more people experience negative emotion related psychiatric disorders. Among various types of neurosis, depression has the greatest impacts. According to the disability-adjusted life year as index from World Health Organization (WHO), the report of global burden of disease has predicted that depression would become the second highest burdened disease of DALY among the diseases in the world in 2020 (Murray & Lopez, 1996). WHO has also announced depression, cancer and AIDS as the three major diseases of the century. There are many factors associated with depression, such as genes, changes in biochemical substances, diseases, drugs, personality traits, and perceptual losses and pressure. Studies have shown that human genes and emotion are closely related; for example, the short allele of gene 5-HTTLPR could increase the risk of depression and suicide (Fox, Ridgwell, & Ashwin, 2009).

Studies have shown that the age and depression has negative correlation. For people with age 18 to 38, the depressive tendency is more obvious with the increase of the age (Steer, Ball, Ranier, & Beck, 1999). The most serious result of Depression is suicide. In United States, suicide is the third major cause of death for teenagers aged 15 to 24, and is the sixth major cause of death for children aged 5 to 14. Many adults with Chronic Depression have suffered from depression during the teenager or child period (Waslick, Schoenholz, & Pizarro, 2003). Depression limits the academic achievement of the teenagers, affecting their self-care ability, causing disabled and unable to take care their daily life, and even causing them to suicide. This causes important health problem of the students and cannot be neglected (Fulkerson et al., 2004; Pelkonen, Marttunen, & Aro, 2003; Smith & Blackwood, 2004). Freshmen enter the new learning environment. The challenge from schoolwork and interpersonal relationship may cause the freshmen to have doubts about the personal ability, and affect their self-concept (Cassidy & Trew, 2004). Studies have shown that low self-identity and huge pressure would cause depressive mood and evading the issue of the teenagers. In the long term, it may risk the physical and mental development of the university students

#### Contribution of this paper to the literature

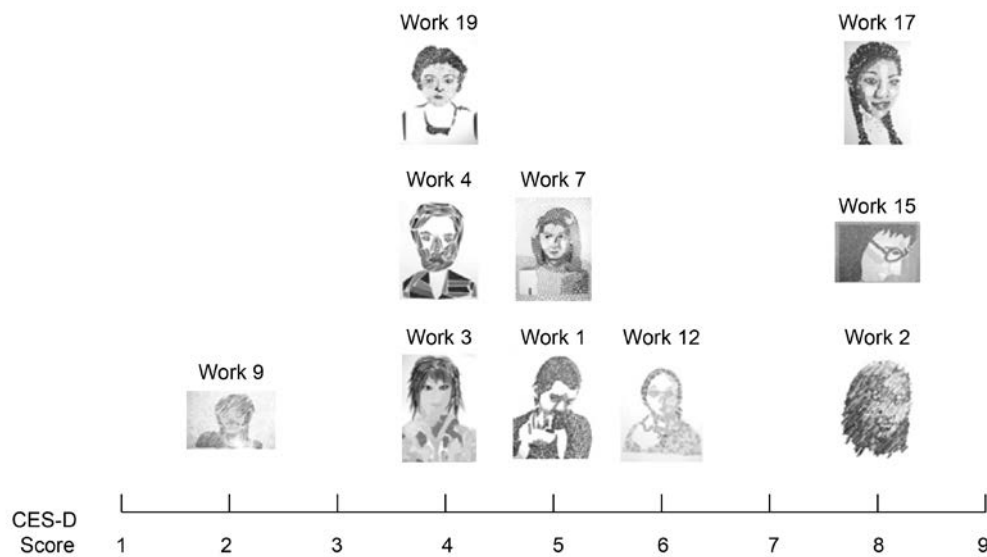
- Regarding what the audience perceives of a work, there is a positive correlation between happy-unhappy and like/dislike.
- NoDT's works are more liked by the audience, and NoDT's works also make the audience happier.
- DT's works are less liked by the audience, and DT creators can be affected by depression tendency and create less liked works.

(Martyn-Nemeth et al., 2009). Many freshmen leave the hometowns that provide security and identity. However, they still have not blended in with the new environment and may eventually experience loss (Chow & Healey, 2008). Simultaneously, since the network is common, many university students overindulge in the Internet, for which it may cause issues on physiology, psychology, social intercourse and specialty, such as depression, anxiety, regression of academic and professional performance, insomnia, health issue and social withdrawn (Beard, 2005; Griffiths, 2000; Young, 1998, 2004).

According to the seriousness of Depression, there will be different therapy. In addition to medication, there are other therapy approaches. Seasonal affective disorder (SAD) is a mental illness associated with a lack of sun exposure, and SAD patients would experience seasonal mood swing. One common practice to handle SAD is to give the patients light therapy, and indeed, numerous studies have demonstrated that light therapy has a significant effect on SAD (Eastman et al., 1998; Ruhrmann et al., 1998). Art therapy is a helping profession that combines creative artistic expression and psychotherapy. In art therapy, the artistic media is applied for creative artistic expression of visual imagery. Through the expression of imagery, the personal thought, emotion, interest, ability and personality would be reflected and integrated. Art therapy has begun since the early 1900s. The paintings of the patients were applied for diagnosis and analysis. The actual professional development started from the psychiatric treatment movement in 1930-1940. Affecting by the concept from Sigmund Freud and Carl Gustav Jung, art becomes the media of communication and integration for psychoanalysts treating the children (Mcwhinnie, 1985). The paintings of the children reflect their personalities. The painting behaviors of the children reflect their personality emotional state (Farokhi & Hashemi, 2011). By applying painting as the media, the art therapy could integrate the linguistic and non-linguistic communication between left and right hemispheres of the brain. The imagery and image of the painting activity could be applied to arouse the linguistic expression of patients suffering from anxiety and depression, and improve the reaction and healing effect to the patients suffering from depression (McNamee, 2004). The development of art therapy combines different theory models and psychotherapy, including psychology, philosophy, aesthetics and art (Blatner, 1991; Lusebrink, 1991; Stamatelos & Mott, 1983).

Aside from letting the therapist understand their clients, art therapy also allows the clients to use perception as a communicative bridge for connecting the internal self to the external world (Zambelli, Clark, & Hodgson, 1994). Art is used by creators for expressing their thoughts and ideas, while the creative works can be viewed as an interface allowing creators to communicate with the outside. When a patient is not willing to use words or languages to express their thoughts, artworks can function as a communication tool bridging the patient to the therapist. Many studies used artworks as clues for the subjects to express their internal affection, thoughts, and feelings using concrete colors and shapes (McNamee, 2004; Ulman, 1992). Aside from using the media of artworks as clues, there are also studies using art creation as a type of therapy. The characteristics of the children reflected on the paintings are similar to the behavioral characteristics in the social situation. The art reflects the personality emotional state of the children (Farokhi & Hashemi, 2011). There is "externalization" for artistic creation, which allows people infusing the thought and emotion into the artistic media. The persons involved are allowed to infuse into their created works no matter it is related to something they like or hate. The artworks are improved continuously in the creative process. It is also true for artists, who keep on developing and get the new meaning. If the artists are too emotional or lacks of emotional compatibility to the artistic works, there would be negative effect to the articles (Sullivan & McCarthy, 2009).

In art therapy, the patients suffering from depression infuse the feeling into the works in the creating process during artistic creation. Designers also show their ideas from the works. There are more and more evidences showing that there are correlation between depression and certain cognitive functions, such as selective attention, message processing and obvious obstacle to working memory (Garcia-Toro et al., 2003; Koetsier et al., 2002; Landro, Stiles, & Sletvold, 2001; Nebes et al., 2003; Schatzberg et al., 2000). There is considerable correlation between origin of job pressure and depression (Jurado et al., 2005; Mausner-Dorsch & Eaton, 2000; Whooley et al., 2002). In Taiwan, the booming of the design industry increases the needs for design personnel. There is also a graduate increase over the years in the number of design related schools. Designers' emotion can directly affect their design output. Depressive mood of the designers affect their choice of color matching (Wu, Chang, & Lee, 2009). Designers with negative emotion often unconsciously infuse their negative emotion into their design products, which can be important because their products may be widely distributed on the market and be massively used. Designers use



**Figure 1.** Ten of the “Self-Portrait” Mosaic Creation Works belong to Creators with a Low CES-D Score

their professional expertise to integrate the sensual quality into the design, but what if a designer has a negative emotion and projects the negative emotion onto the works? Would the audience perceive the negative feeling? The study examined the projection of depressive mood onto creative works from the perspective of the audience and of the creators respectively.

## METHOD

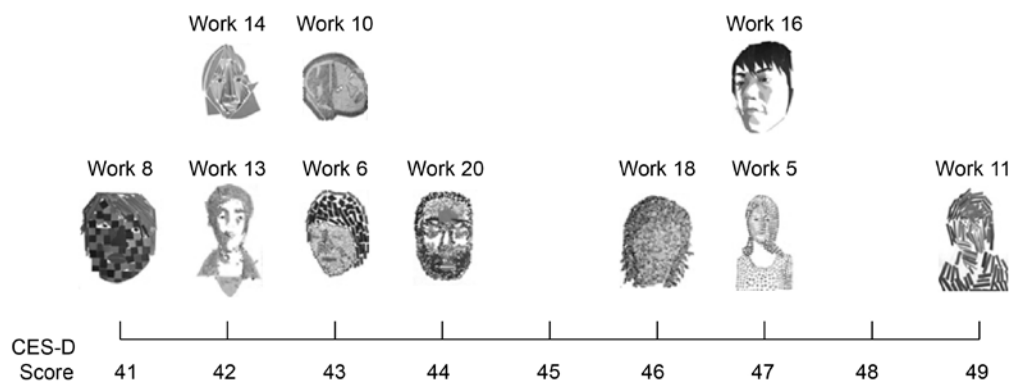
### Subjects

All the subjects (N = 123; 65 males and 58 females) participated in the experiments are Taiwanese and design-major students. Their average age is 19.14 years old. They all took the Ishihara Color Deficiency Test and verified that they are not color blinds (Ishihara, 1993).

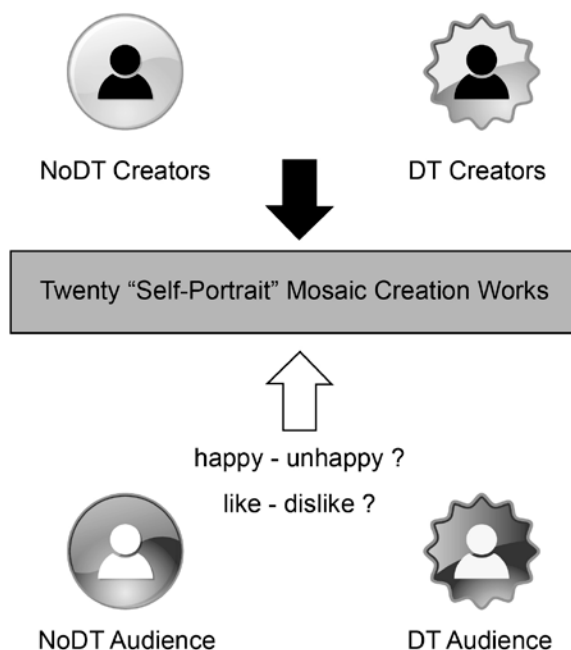
### Experimental Materials

The Center for Epidemiologic Studies Depression (CES-D) scale is a commonly applied self-report depression scale that has 20 question items (Carleton et al., 2013; Radloff, 1977, 1991). CES-D was originally used for assessing the depression condition of adults, but in recent years, it has been found that CES-D is also good and solid for children and adolescents (Edman et al., 1999; Olsson, Nordstrom, Arinell, & von Knorring, 1999; Prescott et al., 1998). Therefore, the study used CES-D for determining the level of depression. For youngsters, mood swing is a developmental feature during the adolescent phase, and because of mood swing, the optimal cutoff point for screening adolescent depression is higher than for adults (Ghubash et al., 2000). Because the study subjects are Taiwanese, the optimal cutoff point of depression is 29 (Yang, Soong, Kuo, Chang, & Chen, 2004). In addition, because adolescents are more likely to experience mood swing, instead of using the term “depression”, it is recommended to use “depressive tendency” to refer to adolescents with the depression disorder. The subjects of the study were divided into two groups: depressive tendency (DT) and no depressive tendency (NoDT). Among the 123 subjects, who are all design-major students, their optimal cutoff point is 29, and 42 of them are DT (34%) while 81 are NoDT (66%).

For selecting the creative works, the study picked 10 with the lowest CES-D and 10 with the highest CES-D from the 233 works of “self-portrait” mosaic creation of relevant scholars (Wu, 2009). In “self-portrait” mosaic creation, the subjects are asked to create a work about self-image by pasting up different color blocks. Among the 233 works of “self-portrait” mosaic creation, ten of the works belong to creators with a low CES-D score (ranged from 2 to 8 points), making them the NoDT (See [Figure 1](#)). While another ten works belong to creators with a high CES-D score (ranged from 41 to 49 points), making them the DT (See [Figure 2](#)).



**Figure 2.** Ten of the “Self-Portrait” Mosaic Creation Works belong to Creators with a High CES-D Score



**Figure 3.** Emotional Projection on Creative Works from Perspectives of Audience and Creators

### Experimental Design

The objective of the study is exploring emotional projection on creative works from perspectives of audience and creators (See [Figure 3](#)). For the creator part, the study picked 20 works from other research papers (Wu, 2009). For the audience, in order to prevent mood swing associated with pressure from school exams, the experiment was conducted two weeks after the mid-term exam. To avoid interfering with the study objectives, the audiences were not informed about the objective of the experiment; they were only told to fill out the CES-D and the semantic differential scale.

The objective of semantic differential scale is to determine the most direct perceived value of a work rated by the audience (Taft, 1997). Because the study is related to depressive mood, terms like, dislike, happy, and unhappy were directly used as relative adjectives. For the questionnaire, it has a 7-point rating scale for quantifying two categories, like-dislike (preference) and happy-unhappy (happiness), perceived by the subjects for the 20 works. The center of the scale is neutral and has a score of zero. As we move toward the left end of the scale, the level of like increases, and the score also increased from 1 to 2 and to 3. If we move toward the right end of the scale, the level of dislike also increases, and the score changes from -1 to -2 and to -3. The works are presented randomly to increase the reliability.

**Table 1.** Correlation Analysis of Audience’s Perceived Happiness of the 20 Works

	1	2	3	4	5	6	7	8	9	10
r	0.57**	0.69**	0.55**	0.80**	0.59**	0.71**	0.68**	0.81**	0.70**	0.55**
p	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	11	12	13	14	15	16	17	18	19	20
r	0.59**	.60**	0.58**	0.70**	0.45**	0.45**	0.70**	0.52**	0.63**	0.71**
p	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

**Table 2.** Mean and SD of Works of NoDT Creators Rated by Audience: Like-Dislike

Work	1	2	3	4	7	9	12	15	17	19
Mean	-0.20	-0.11	-1.75	-0.21	0.92	-0.30	0.71	1.05	0.85	0.30
SD	1.65	1.78	1.34	1.70	1.50	1.80	1.72	1.50	1.51	1.65

## RESULTS

### Semantic Differential Scale Results

The questionnaire comprises two themes: like-dislike and happy-unhappy. The obtained responses about the 20 works were submitted to correlation analysis. **Table 1** shows correlation analysis results of the audience’s perceived happiness of the 20 works. It can be found that for each work, there is a positive correlation between like-dislike and happy-unhappy of the audience. That is, those works that make the audience happy are also liked, while those making the audience unhappy are disliked.

### Emotional Projection of Works from the Audience’s Perspective

Among the 20 works, the most liked work is Work 16 (1.25±1.51), while the most disliked work is Work 3 (-1.75±1.34). As for happy and unhappy, Work 17 made most audience feel happy (1.18±1.57), while Work 8 made most audience feel unhappy (-1.55±1.62).

From analyzing the correlation between CES-D score and the audience’s perception of the works using correlation analysis, it was found that only Work 1 has a negatively correlation between CES-D score and preference ( $r=-0.19$ ,  $p=0.0$ ); other works showed no significant correlation. The statistical results suggest that the audience’s higher depression tendency (i.e., a higher CES-D score) is associated with a higher level of dislike of Work 1, but for the remaining 19 works, the audience’s perception is not affected by depression tendency. The audience’s CES-D and the perceived happiness of the 20 works are not significantly correlated.

The study divided the audience into two groups, DT and NoDT, to explore whether depressive mood can affect the perception of creative works. Among the 20 works, Work 16 is the one most liked by DT and NoDT, while Work 17 is the work that makes both DT and NoDT feel happy. An independent simple t-test was conducted to compare the DT and the NoDT groups regarding the audience’s like-dislike and happy-unhappy of the 20 works. For like-dislike, no difference was found between DT and NoDT for 17 out of the 20 works; only Work 1 ( $f=3.49$ ,  $p<0.05$ ), Work 2 ( $f=7.78$ ,  $p<0.05$ ), and Work 6 ( $f=4.05$ ,  $p<0.05$ ) showed a significantly difference. For NoDT, they showed a greater preference for Work 1 and Work 2 than DT did. More specifically, Work 1 is liked by NoDT (0.03) but disliked by DT (-0.62). As for Work 6, NoDT disliked the work more than DT did.

For perceived happiness, independent simple t-test results show a lack of difference from 19 out of the 20 works. The only work with significant difference is Work 2 ( $f=4.46$ ,  $p<0.05$ ). NoDT (-0.75±1.52) perceived less happiness from Work 2 than DT did (-0.63±1.87).

### Exploring Emotional Projection in Creative Works from the Creator’s Perspective

Among the 20 works, ten of them are from NoDT while the other ten are from DT. Overall, the ten NoDT creators’ works are more liked by the audience (0.13±1.61), and the audience are also more likely to feel happy about their works (-0.14±1.61). The other ten works from DT creators are less liked by the audience (-0.65±1.61), and the audience are also more likely to feel unhappy about their works (-0.93±1.51). For the perception of like-dislike, half of the works from the ten NoDT creators are liked by the audience (see **Table 2**), while for the ten works from DT creators, only Work 16 is liked by the audience (see **Table 3**). For the perception of happiness, four out of the ten works by NoDT creators are perceived more toward the happy side (see **Table 4**), while all the ten works by DT creators are perceived as unhappy (see **Table 5**).

**Table 3.** Mean and SD of Works of DT Creators Rated by Audience: Like-Dislike

Work	5	6	8	10	11	13	14	16	18	20
Mean	-0.53	-1.33	-1.35	-0.07	-1.38	-0.04	-0.46	1.25	-1.52	-1.05
SD	1.53	1.51	1.76	1.68	1.67	1.71	1.55	1.51	1.52	1.62

**Table 4.** Mean and SD of Works of NoDT Creators Rated by Audience: Happy-Unhappy

Work	1	2	3	4	7	9	12	15	17	19
Mean	-0.81	-0.71	-1.43	-0.53	0.47	-0.02	-0.29	0.68	1.18	0.04
SD	1.67	1.64	1.37	1.59	1.55	1.85	1.64	1.67	1.57	1.53

**Table 5.** Mean and SD of Works of DT Creators Rated by Audience: Happy-Unhappy

Work	5	6	8	10	11	13	14	16	18	20
Mean	-0.50	-1.31	-1.55	-0.76	-1.50	-0.63	-0.78	-0.02	-1.27	-1.03
SD	1.47	1.38	1.62	1.39	1.45	1.63	1.35	1.60	1.59	1.65

**Table 6.** Cross-Comparison of Like-Dislike between DT and NoDT Audience for Works of NoDT Creators

Audience	Like-Dislike for works of NoDT creators							Total
	-3	-2	-1	0	1	2	3	
No depression (N)	72	70	132	158	162	126	84	804
Expected	84.9	82.2	125.7	154.0	150.0	123.0	84.2	804.0
Column %	5.9%	5.7%	10.8%	12.9%	13.3%	10.3%	6.9%	65.8%
With depression (N)	57	55	59	76	66	61	44	418
Expected	44.1	42.8	65.3	80.0	78.0	64.0	43.8	418.0
Column %	4.7%	4.5%	4.8%	6.2%	5.4%	5.0%	3.6%	34.2%
Total	129	125	191	234	228	187	128	1222
Expected	129.0	125.0	191.0	234.0	228.0	187.0	128.0	1222.0
Column %	10.6%	10.2%	15.6%	19.1%	18.7%	15.3%	10.5%	100.0%

To further explore the impact of depression tendency on the association between the audience and the creators, the study did the chi-square analysis on the audience with or without depression tendency and works of creators with or without depression tendency. The results suggest that the audience with or without depression tendency is significantly correlated with their preference for works of NoDT creators ( $\chi^2=15.29$ ,  $p=0.02$ ), but the audience with or without depression tendency is not correlated with their preference for works of DT creators ( $\chi^2=10.23$ ,  $p=0.11$ ), with the perceived happiness of works of NoDT creators ( $\chi^2=8.99$ ,  $p=0.17$ ), or with the perceived happiness of works of DT creators ( $\chi^2=5.28$ ,  $p=0.51$ ). In **Table 6**, under a significant level of  $p=0.05$ , depression tendency or not of the audience is significantly correlated with their preference for works of NoDT creators. Nonetheless, because the Cramer's V coefficient is 0.11, the correlation is not strong.

## DISCUSSION AND CONCLUSIONS

The study examined the effect of depression tendency through the perception of the audience. Creators would project their emotion onto their works, while the audience can perceive the emotion through the style or the quality of the creative works. Here are the conclusions.

- (1) Regarding what the audience perceives of a work, there is a positive correlation between happy-unhappy and like/dislike. In other words, the tendency of depression cannot affect the perception of the audience. Moreover, most people like works that make them feel happy while dislike works that make them unhappy.
- (2) The correlation between the audience's CES-D score and their perceived happiness of or preference for the 20 works is insignificant. Only one significantly negative correlation was found from the preference of Work 1. Therefore, what the audience perceives about a work is not affected by the level of depression, and the audience with depression tendency showed that they dislike Work 1. The creator of Work 1 used lots of red and orange colors; in fact, Work 1 is the work among all the 20 works that has red been used the most. Studies have shown that there is a correlation between color perception and depression, and the finding here can be further explored in the future.
- (3) NoDT's works are more liked by the audience, and NoDT's works also make the audience happier. In contrast, DT's works are less liked by the audience, and DT creators can be affected by depression tendency and create less liked works.

- (4) From the cross-comparison between the audience and the creators, it can be found that there is no significant correlation between whether the audience has a tendency of depression or not and works of creators with or without tendency of depression. A significant correlation was only found between the audience and the preference for works of NoDT creators, but the correlation is not strong.

Leo Nikolayevich Tolstoy (1828-1910) remarked that "Art is a human activity consisting in this, that one man consciously, by means of certain external signs, hands on to others feelings he has lived through, and that other people are infected by these feelings and also experience them". This research also shows that the creators' feelings are connected with their works. The study results demonstrated that the tendency of depression does not have much influence on the perception of audience, but it has impacts on the works of creators. When creators have a tendency of depression, they would project the emotion onto the works, which would be less liked by audience and make the audience unhappy.

Presently, Taiwan has been working hard on shifting away from OEM. In this case, a good design industry can effectively elevate the competitiveness of companies. As a result, the country shall be depending on all design-major students to speed up the development of the country. Positive emotion leads to positive energy (Barnhofer et al., 2009; Kenny & Williams, 2007; Ma & Teasdale, 2004), and products with positive energy can bring the audience positive and good feelings. If research can demonstrate that the projection of emotion by the designer onto the works can indeed affect the audience, such information shall point out an important direction for the government in cultivating design-major students in the future and should be applied on the education and development of design-major students in order to infuse positive energy into the design industry.

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