



# Investigation of the Design Concepts and Potential Problems of Defensive Jewelry

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**Abstract:** Due to the rising crime rate and the substantial augmentation in public awareness of self-defense in recent years, many people show the propensity to carry defensive items with them. The jewelry industry has also followed this trend in due course. As a relatively personalized self-defense tool, defensive jewelry shares a stepwise occupation in the market. Various products featuring novel shapes, convenient applications, and ingenious designs can thus be sought out. In parallel with the rapid growth of its market, there remain many problems with the existing products. They should be taken under consideration and then be carefully solved or at least alleviated. Otherwise, their future is very likely to be shackled. This paper will precisely center around the design concepts and the potential problems of defensive jewelry. The author will interview certain persons, review relevant figures, search for existing research, publish questionnaires, and subsequently analyze the survey results. All the conclusions will be drawn from and built upon the work already carried out in this field. In addition, the author will also propose some measures and suggestions for facilitating the status quo.

**Keywords:** jewelry design, product design, self-defense products, design concept, personal security

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## 1. Introduction

In recent years, due to the relative stagnation of the global economy caused by the sweep of the novel coronavirus epidemics, the crime rate in numerous countries has shown a relatively gradual increase. Criminal cases of egregious means and severe influences occur occasionally, including robbery, rape, intentional injury, and even homicide. For instance, at least 800 homicides were reported in 2021, which appeared to be the highest level in 25 years, according to the Chicago Tribune. Illinois gun stores are showing an appalling surge in gun sales, including a sharp increase in purchases by women and minorities. The owner of an indoor shooting range in Des Plaines, Illinois, says gun sales at his store have been up more than 200 percent since the COVID-19 epidemics peaked (Qingtongshijiao, 2022).

How to fully defend one's personal safety and effectively fight against various violent attacks has once again become a prevalent topic. As a kind of equipment that is easy to carry, easy to use, and is less prone to misfires than guns, a variety of self-defense items have become the top choice for many people to defend themselves. As a result, it may be broadly noticed that such products gradually enter the audience's sight, including but not limited to pepper spray, safety hammers, body armor, helmets, and pens with knives hidden inside (Anonymous, 1995).

Jewelry industry also seems to be aware of this trend. This can be partly due to the dual roles of women as both the primary audience of the jewelry industry and the primary victims of various violent crimes. In recent times, consumers can find that some products with unique shapes appear in many jewelry stores, be they online dealers or brick-and-mortar shops. These products are designed and manufactured to give the wearer some resistance to violence. For example, rings with steel nails welded (the nails are hidden in pearl-shaped screw caps when not in use), pendants protruding a small blade from the side (usually, the blade is placed in a sheath of the same size), crosses showing a sharp cone when the screw cap is removed (the cap needs to be tightened to avoid hurting its wearer), beak-shaped nail sleeves, etc. These products can be referred to as power jewelry.

As an essential branch of product creation, jewelry design has gradually formed a specific research field. At the same time, the design of power jewelry is still a topic that has not been adequately studied before. In fact, since at least two decades ago, many jewelers have begun to think about "how to make jewelry not only decorative, but also have a certain practical value." The essence of this question is how to give a piece of jewelry functionality and use methods and, at the same time, not let it lose the original decoration and beauty of adornment. Defensive jewelry is a specific product that needs to combine these two properties. Therefore, its design concept is also a breakthrough for the problems that predecessors have been studying. Research on power jewelry can not only draw attention to more possibilities of jewelry design, but also draw inferences from one case and bring more designers in each industry to think about it.

In parallel with the rapid growth of its market, there remain many problems with the existing defensive jewelry. The most serious one is that it may inevitably cause some unintended harm to the wearers or others. If the screw cap is accidentally lost, for example, its exposed sharp parts may risk causing puncture wounds and scratches. Besides, certain pieces of jewelry that are too aggressive can give people wrong impressions as unfriendly detriments and thus cannot be allowed on trains or planes. These problems may be aggravated as they gradually enter the jewelry market. They should be taken under consideration and then be carefully solved or at least alleviated. Otherwise, their prospect is very likely to be limited.

The current world economy is gradually forming, and the connections and interactions between all walks of life are becoming more and more frequent. Every industry needs to rely on transformation and innovation to maintain its vitality. Defensive jewelry skillfully combines the industries of jewelry and safety products, taking an important step in jewelry design innovation while also laying a solid foundation for the sustainable development of the jewelry industry. Studying the design concept of defensive jewelry and discovering the current problems of defensive jewelry is crucial to the sustainable and healthy development of this industry.

## 2. Defensive jewelry: a combination of power and beauty

### 2.1 The power of defensive jewelry

As a highly functional product compared with other types of jewelry, defensive jewelry undoubtedly needs to maximize its practical value. Mrs. Zhang (enterprise employee, 52) said: “Defensive jewelry, in a strict sense, is different from ordinary pieces, and it’s even out of the category of jewelry to some extent. I think it should be classified as a kind of stuff that resembles a piece of protective equipment or a miniature weapon worn on the skin. Practicality is extremely vital for these pieces. Unpractical defensive jewelry is like a house without a roof. It will be full of loopholes; even a drop of water can destroy it.”

Regarding the practicality of defensive jewelry, its most outstanding expression is in the term “sense of power”. Power is a great concept that includes making the people close to you feel safe, making strangers feel a sense of inaccessible oppression, and making people with bad intentions feel aggression and stay away. Ideally, the power of defensive jewelry should strike a perfect balance between these three to maximize its practicality. Ms. Li (government staff, 22) said: “I have been looking for a perfect pendant that only exists in films and television series. I saw a movie many years ago. In one of the scenes, the heroine was attacked on the road at night; then she exposed the knife hidden in the pendant to beat back the perpetrator with force and finally managed to escape. That pendant gave me an indelible impression; I want to have one too.” The realistic power of defensive jewelry is rarely as perfect as that in fictional works. Still, it has been improved to a relatively high level by a variety of dedicated designers.

First, this sense of power is reflected in the just-right handling of the sharpness of the product. Among all defensive jewelry, the number of products that utilize sharpened metal to achieve a defensive effect occupies the vast majority (more than 70%). Taking rings as an example, most of all the defensive rings sold on Taobao (China’s largest online shopping center) possess a relatively sharp metal cone or a hard albeit slender metal needle welded to a particular decorative part, such as the defensive ring sold at the flagship “PUSHIXUAN”. The ring inspired by the ancient Egyptian god of death Anubis (Figure 1) exemplifies this design philosophy. It’s not difficult to observe that the designer specially sharpened Anubis’ ears, and the two acute-angled triangular ears added a sense of majesty while keeping decorative effects. A malicious person may be deterred from the idea of aggression when catching sight of this ring. Even if some daring criminals do attack, they are very likely to be hurt by its sharp parts and suffer the consequences. Another wise conception of this ring is that it has better control over the sharpness of the tip. As shown in the figure, the angle of the two acute angles is about 30°, which can produce a specific deterrent effect without causing one’s relatives and friends to stay away. If the angle is too obtuse, the sense of power will be weakened, and the effect of defense will accordingly disappear. If it is too acute, causing an increase in aggression, it would be easy for people to feel threatened, although this is usually a wrong judgment. Still, 30° is relatively sharp. The wearer needs to use it carefully to avoid accidental injury.

In addition, some designers use steel needles to design defensive jewelry, such as the ring launched by the Taobao shop “All Kinds of Self-defense Items”. The seemingly ordinary black bead ring (Figure 2) uses this design concept. Actually, the black beads just act as screw caps. When it detaches from the ring’s body, the steel needle hidden under it is exposed to the air. When the wearer is in danger, he can pull off the black bead cap at the fastest speed and beat back the perpetrator with the steel needle to achieve the defense purpose. This design concept is more conservative and safer than that in Figure 1. In other words, it increases the difficulty of use and reduces the possibility of unwanted injury. The designs of Figure 1 and Figure 2 respectively possess their own merits. It’s infeasible for one to judge who is better and who is worse. People can choose products that are more suitable for them from their own needs.



Figure 1. The Anubis ring (source: <https://m.tb.cn/h.fLXcG3f?tk=ZRq22TCYBVi>)

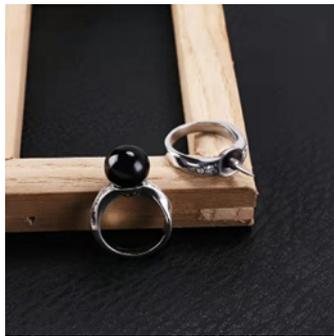


Figure 2. The black bead ring (source: <https://m.tb.cn/h.fLXc5zy?tk=ybMm2TCb1GH>)

Second, this sense of power is reflected in a good grasp of the relationship between sharpness and size. In addition to using sharp metals to add a sense of power to jewelry, a considerable number of designers choose to inlay micro blades in jewelry for their creations. The tiny blades are usually hidden in scabbards of the same size or hinged to lie flat in grooves. When used, the wearer stretches them out to fight back against the perpetrator. For this kind of defensive jewelry with the blade as the main “weapon”, the size control of the blade also reflects a unique philosophy. Generally speaking, the size of the utility knife blade circulating in the Chinese mainland market is about 8\*15mm. As a defensive jewelry part, the blade needs to be smaller so as not to be mistaken for a new type of contraband stuff. Their ideal size should be around 5\*8mm, a size that neither loses aggression nor hurts innocents.

The flagship product of Taobao store “Dream Guard”, the knife ring (Figure 3), appropriately responds to this design idea. The ring is simple in shape and easy to use. The tiny and extremely sharp blade is usually hidden in a long groove, only to be protruded when it is in use. The connection between the blade and the ring body is fixed with screws to prevent the knife from falling off accidentally, which dramatically enhances the practicability of the product. This ring also has an advantage: the sense of power and deterrence only comes at the right moment. In the non-use state, almost no one can identify this as defensive jewelry with a hidden blade. It’s similar to the popular blade-hidden ballpoint pen prevailing on the internet and also has some similarities with the black bead ring in Figure 2. Its comparative advantage over these two is that there is little risk of missing parts (imagine if the black bead in Figure 2 accidentally falls off, and the steel needle is exposed to the air without anyone noticing, it is likely to cause some unwanted scratches).



Figure 3. The knife ring of “Dream Guard” (source: <https://m.tb.cn/h.fpXI0TF?tk=9NEx2TCclai>)

In the TV series “The Legend of Chu Qiao”, the heroine played by Liying Zhao also wears a defensive ring. The

Chinese call this kind of stuff “hidden weapon jewelry”, which means it looks ordinary but is actually fatally aggressive. After the TV series ended, the Hangzhou Defensive Products Headquarters re-engraved this trendy defensive ring (Figure 4). The piece is carved into the shape of a feather, with an arrow-shaped knife fixed at the tip (similar to the Figure 3, the arrow is also lying down when not in use, parallel to the ring’s body). One can observe that the size of the arrows is larger than the knife in Figure 3, but the sharpness is much lower. To a certain extent, this also reflects a subtle design philosophy, that is, the designer’s precise control of people’s psychology. People are often susceptible to objects that are prone to significant threats. When the sense of power exceeds a certain threshold, it will cause a certain negative effect on people’s psychology. For example, Mrs. Zhang (enterprise employee, 52) said: “When I see people on the street wearing all kinds of pointed jewelry, I subconsciously think they might attack me. They are, to some extent, similar to the people walking around with knives. It scares me a lot.” If the blades are too sharp, designers diminish the psychological pressure by reducing the size of the blades; if larger pieces need to be designed, the designers lower their sharpness to lessen the oppression of the effects to the crowd, be they wearers or strangers who occasionally notice the product.



Figure 4. The famous ring in “The Legend of Chu Qiao” (source: <https://m.tb.cn/h.fKWkJT1?tk=iUhn2TCdWD7>)

Defensive jewelry needs to have a certain sense of power, which should not be expressed as absolute force or oppression, but as a just right shock and warning. The designers’ control of sharp angles and the handling of blade sizes reflect this design philosophy. Defensive jewelry without power will lose functionality to some extent. And defensive jewelry that is too strong will backfire, totally become a weapon, and even give people an unfriendly impression. To accurately control the concept of “power”, current designers have got a lot of achievements, while these need to be further improved in the future.

## 2.2 The beauty of defensive jewelry

Defensive jewelry, as the name suggests, belongs to a branch of the jewelry category. As a kind of or that people wear on the body, jewelry is an essential beauty feature (Qian, 2021). Jewelry without beauty will lose part of the market to a certain extent. Today, women are still the main victims of various crimes, and most defensive jewelry also regards women as the main consumers (Song&Zhang, 2021). For most women, an important reason for wearing jewelry is to beautify themselves. Even defensive jewelry should have certain aesthetics and decoration. Ms. Li (government staff, 22) said: “If the jewelry is not beautiful enough, it will greatly reduce my desire to buy. In my heart, the beauty of jewelry is the most important thing, even for defensive jewelry.”

Many designers realize this and are designing more jewelry with both characteristics and practicability (Qian, 2021). The author has studied the appearance of more than 100 pieces of defensive jewelry and subsequently found that their design concepts may follow certain rules to embellish the appearance. The mastery of “defensive aesthetics”, with regard of the products, plays an important role in the process of their entrance into the consumer market.

This “defensive aesthetics” can first be reflected in the designer’s planning and creation of the overall form of the work. The shape of defensive jewelry can be roughly divided into two parts: the part used to decorate and connect with the wearer and the other, with a certain shocking force, used to create a sense of power. Experienced designers skillfully combine these two parts to make a natural transition between them and avoid the bluntness and embarrassment that consumers may find in them (Wang, 2017). The Anubis ring shown in Figure 1 is representative of this design concept. One can notice that Anubis’ ears are the main embodiment of the sense of power and its connection with the rest of the ring shows a very harmonious transition. The whole product takes Anubis’ head as the main design inspiration, which allows all elements to be combined in an orderly and not rigid manner. Ultimately, a highly stunning work was finished.

Since the establishment of the Italian brand “Chi ha paura...?”, it has been committed to designing jewelry possessing

not only decorative value. The brand's whistle ring (Figure 5) is an example of innovative defensive jewelry. Unlike most counterparts of the same type, this ring does not use sharply shaped metal as its defensive tool. Instead, it's tactfully designed in the shape of a whistle and the product looks like a tiny whistle. When the wearer is in danger, it can be blown immediately to seek help from the surrounding. The design of the whistle ring is exquisite and innovative, which seems to be fantastic to the consumers. Most importantly, it completely integrates the shape of the whistle into the ring, which dramatically improves the integrity and beauty of the work. The pendant with a safety alarm introduced by some companies also follows this design concept. They seem to be committed to making the wearers protect themselves effectively while avoiding accidental injury. Therefore, they did not use sharp shapes as design elements.



Figure 5. The whistle ring of “Chi ha paura...?”

In addition, some designers try to attach defensive functions by processing and deforming traditional jewelry. They take advantage of the original shape of the jewelry, adding or subtracting parts and elements to achieve this goal. Chinese hairpins are the most typical example in this regard. The hairpin is defined as a long piece of jewelry worn on the head of women in ancient China (especially the Han women) to fasten the bun. Some of them are carved from jade and metal while others are ground from bamboo or animal bones. Slenderness is reckoned as the unique design aesthetic of hairpins, and their tips are often tapered by sanding. Due to their unique shape, hairpins are sometimes regarded as offensive items. In some Chinese costume TV dramas, they often appear as lethal weapons carried by swordswomen or murderess. This is probably because they are usually buried in a bun. People seldom notice that, once the sharp tip is exposed, this everyday Chinese jewelry will turn into a weapon no less than a dagger.

This has been noticed by some acute designers. They have subsequently used and modified the hairpins according to their original shape. The designer of a Chinese-style shop, “XIUSHI”, designed a new type of defensive jewelry called the “hairpin dagger” (Figure 6). These products seem to be common hairpins at first glance. In fact, after removing the top button cap, the dagger hidden inside will be revealed, which significantly increases the aggressiveness of these products. The “hairpin dagger” gained unprecedented attention as soon as it appeared, and now it has become the most popular flagship product of the store. To some extent, this reflects the creative concept of innovation based on traditional design aesthetics.



Figure 6. Hairpin dagger of “XIUSHI” (source: <https://m.tb.cn/h.fpXs5NS?tk=RKu92TCXMh6>)

Overall, in the design concept of defensive jewelry, beauty, as a vital element, has a long-term necessity. Nonetheless, this definition of beauty is not set in stone. Designers can take bold innovations according to the latest fashion trends and design new products that have never appeared before. They can also transform and upgrade past jewelry types to meet the requirements of self-defense. However, all the innovations and changes need to be confined within a premise, that is, not to destroy the overall sense of balance and harmony of the whole piece. In order to rapidly update their products, some manufacturers act perfunctorily in the design process by cluttering together elements that were initially unrelated. These products may not possess great vitality even if they are put into the market.

### 2.3 The relationship between power and beauty

To a large extent, the power and beauty of defensive jewelry show a symbiotic relationship that complements each other. This symbiotic relationship is manifested in that the two are as indispensable just as the two wings of an airplane. At the same time, the two should be mutually inclusive so that consumers can maintain a visual and psychological balance. Once the excessive presence of one of the parties weakens or destroys the other, such a product cannot be called a successful item. If the designer pursues the former excessively and ignores the latter's existence, the product will break away from the category of jewelry and become an ordinary household appliance. If one pursues the latter too much and ignores the existence of the former, it will become ordinary jewelry and no longer possesses defensive value. Defensive jewelry is a product that brings together two characteristics that are strictly difficult to coexist.

According to this question, the author randomly distributed 30 questionnaires. In a multiple-choice question "which do you think is more important for the function and beauty of self-defense jewelry", and finally obtained the following results (Figure 7). It means that, despite a modest deviation of about 18%, functionality and beauty occupy the same important position in the eyes of more than half of people.

OPTIONS	PROPORTIONS
Function	82.14%
Beauty	64.29%

Figure 7. The result of the questionnaire

The way to find the delicate balance between power and beauty provides a long-standing headache for many designers. Much practice has been put into this field, while the methodology of regularity is still not systematically proposed. After researching more than 100 pieces of best-selling defensive jewelry, the author summed up a set of generally applicable methods. These methods are still relatively systematic. As for concrete applications, designers need to implement them into unit products according to the specific situation.

First of all, the power of a product can reside in its aesthetics. In response to this principle, the Anubis ring in Figure 1 provides a great example again. This ring is one of the best in the same type of jewelry in terms of design concept and user response. Anubis' ears are originally sharp triangles, and Anubis himself also carries a dignified and solemn character. In this work, the power of defensive products and the temperament of the design elements themselves achieve a high degree of unity. These two characteristics were sensitively captured by the designer, resulting in this very ingenious piece.

Secondly, for some consumers who prefer slender and graceful jewelry, designers can choose to hide the sense of power inside the product and show only the soft part to the outside. The black bead ring in Figure 2 is an excellent example. No one will find its form of defensive jewelry when the spikes are hidden at the bottom of the bead. Another example is the fan knife (Figure 8), the stuff long thought to exist only in Chinese martial arts fiction. A few years ago, the Chinese jewelry store "XIAOYUJIA" re-engraved this legendary hidden weapon and got a good response. When used, the knives stick out to attack; when left idle, the blades are hidden in the folds of the fan. Usually, they are no different from ordinary fans and can also be used as fans or as photo props (folding fans in China have a history of more than a thousand years. The decorative value has already exceeded the practical value, so they are sometimes regarded as a kind of jewelry).

In a word, to balance the effect of power and beauty, designers need to make appropriate adjustments and trade-offs according to product positioning and market targeting. Nonetheless, no matter how to improve one's products, what consumers finally see should be a piece with both the two properties. In other words, all the considerations and modifications should avoid doing the work out of the scope of defensive jewelry. This is of tremendous crucial.



Figure 8. The fan knife of “XIAOYUJIA” (source: <https://m.tb.cn/h.fK3smNQ?tk=HaDq2TyFyL1>)

### 3. Defensive jewelry: a combination of aggressiveness and security

#### 3.1 The aggressiveness of defensive jewelry

“When we encounter an attack, the most instinctive reaction is to fight back.” This seems to have become a consensus. The concept is also widely utilized in the design of defensive jewelry. It can be observed that this feature is followed by conical rings, pendants with a knife, and numerous other products of this kind. They are made of metal while possess a sharp conical or blade shape. Once the wearer is in danger, they often exist as weapons to attack the perpetrator (Song&Zhang, 2021). Among the 30 questionnaires released by the author, one of the questions refers to “what kind of defensive jewelry have you ever known”, and the results are as follows (Figure 9).

OPTIONS	PROPORTIONS
Rings with spikes / cones	60.71%
Coin knives / Pendants with knife	21.43%
Tiger fingers	35.71%
Hairpin knives / fan knives	28.57%
Pepper spray bottles	67.86%
Others	3.57%

Figure 9. The result of the questionnaire

It is not difficult to find from the above table that the two most common types of defensive jewelry, including sharp-shaped rings and pepper spray bottles (because the pepper spray bottle pendant recently launched by many Taobao stores has been widely praised, it is also listed as a kind of jewelry), have both a certain aggressiveness. In other words, they all protect the wearer’s personal safety by causing a certain amount of injury or pain to the injurer. At the same time, in terms of the question “what kind of jewelry would you choose for self-defense”, 53.57% and 42.86% of people respectively chose pepper spray bottles and sharp rings. This partly explains that the popularity of these two products should not be underestimated.

Defensive jewelry needs to have a certain aggressiveness, which seems to have become the self-evident consensus of many jewelry designers (NewArrival, 2016). Most of the examples mentioned above obviously follow this feature. Still, “aggressiveness” is not a single concept. If carefully classified, the term can also be divided into direct and indirect aggressiveness. In the following paragraphs, the author will introduce these two concepts in detail.

Direct aggressiveness, as the name suggests, is the feature of a product that allows the wearer to cause harm to the injurer directly. The tapered rings, pendants with knives, hairpin knives and pepper sprays listed above all show this property. When the wearer is in danger, he (she) stabs the perpetrator’s vital parts with a sharp object on the jewelry or sprays the perpetrator’s eyes to buy himself time to escape. Among all the defensive jewelry, those pieces which can cause direct attacks accounts for the vast majority (Jintouwang, 2016). In the feedback received from the questionnaire, people generally said: “I

tend to wear jewelry that is directly offensive. It makes me feel more secure and gives me more initiative when confronting perils.”

In contrast, jewelry with indirect aggressiveness, although it occupies only a tiny proportion, should not be ignored. This type of jewelry itself does not have strong physical or chemical properties to cause harm. Whereas they can remind people around the wearer that he (she) is in danger through sound or signals so that they can rush to the scene and help fight back at the first time. This type of product is aimed at consumers who are significantly less potent than the perpetrator or afraid of knives and sharp objects. They include the whistle rings created by the aforementioned “Chi ha paura...?” and some pendants that make a loud noise to attract attention (Main, 2020). The alarm pendant launched by the “LIGHTEYE” flagship store (Figure 10) is an innovation in this category. Designers cleverly combine the flashlight and siren and allow users to charge it with a USB port. This reflects the organic integration between jewelry design, industrial design and high-tech technology (Anonymous, 2014).



Figure 10. The alarm pendant launched by “LIGHTEYE” (source: <https://m.tb.cn/h.fLTiYm8?tk=Yms926ewfjn>)

The design of defensive jewelry tends to be, strictly speaking, a multidisciplinary activity involving knowledge in ergonomics, design psychology, and materials science. However, it’s an accepted truth from every angle that defensive jewelry needs to be relatively aggressive. Pieces that lack aggressiveness will lose their vast practical values. Meanwhile, moderate control of the degree of aggressiveness is also an ability that designers need to burnish extensively. How to utilize this property more reasonably and effectively will be one of the questions that designers will continue putting into practice to answer in the future.

### 3.2 The security of defensive jewelry

According to the vast audiences paying attention to this field, defensive jewelry not only needs to be aggressive to protect the wearer from danger, but also needs to minimize the security risks to the surrounding when it is idle. In other words, the jewelry is expected not to cause unnecessary harm (stabs, scratches, etc.) to the owner or others when not in use. In the 30 randomly distributed questionnaires, the author asked: “From your point of view, which is more important, the aggressiveness or the security of defensive jewelry?” In response to this question, the respondents’ feedback is as follow (Figure 11).

OPTIONS	PROPORTIONS
Aggressiveness	13.79%
Security	31.03%
The two are equal	55.17%

Figure 11. The result of the questionnaire

From the table above, it can be concluded that, in addition to more than half of the people who think that aggression and security are equally important, about 31% of the respondents believe that the latter is more important, more than twice the number of the former. This fully reflects that most consumers attach great importance to the safety of defensive jewelry.

There is even a small group of conservative and cautious people who are willing to sacrifice a part of aggression for relative security.

Many designers tend to be aware of this situation, and they are adding this desired security in a variety of ways. A considerable number of the jewelry's sharp parts are covered by screws of various shapes to facilitate proper storage and safekeeping when not in use. In addition to the black bead ring mentioned above, various strange-shaped buckle caps are constantly being designed, such as rose-shaped, diamond-shaped, cat-shaped, and so on. Nonetheless, the problems created by screw caps soon became apparent. As they are constantly being pulled and tightened, loosening of the screws is inevitable. Once the cap is dropped, the sharpened steel needle or cone is exposed to the air. If the wearers do not notice this, they are likely to cause unnecessary loss to those around them.

In order to make up for the shortcomings of screw caps, some designers have created jewelry similar to folding knives. These pieces, as mentioned above, do not require additional protection. When in use, people extend the knives out of the groove and take them back when not in use. This, to some extent, solves the problem that the screw cap is easy to fall off. However, at the same time, it also causes a new hidden danger: when the connection between the blade and the main body is not tight enough, it is easy to cause accidental falling off. Once they slip accidentally, they will not only lose the function of self-defense, but also damage the surrounding objects or people.

The defensive jewelry without safety hazards is currently confined to such products as pepper spray pendants and pendant sirens. The questionnaire involves the question "which kind of defensive jewelry would you give priority to?" The choices of respondents are shown in the Figure below. This result (Figure 12) shows that defensive jewelry with high safety is preferred by most consumers.

OPTIONS	PROPORTIONS
Cone-spiked capless jewelry	6.9%
Jewelry with steel needle and cap	44.83%
Folding knife jewelry	20.69%
Whistle jewelry	37.93%
Spray bottle jewelry	51.72%
Others	3.45%

Figure 12. The result of the questionnaire

It can be surmised from this that the security of defensive jewelry is a feature that cannot be ignored. It also looks set to be an important indicator for many brands and designers to improve and innovate existing products for a long time. Defensive jewelry without security seems to be in the same position as a devastating weapon in the eyes of consumers, thus will not possess a broad market.

### 3.3 The relationship between aggressiveness and security

It can be inferred from the conclusions from Figure 11 that in the eyes of more than half of consumers, the aggressiveness and security of defensive jewelry occupy an equally important position. This probably shows that the vast majority of consumers want to avoid unnecessary harm as much as possible while hoping that jewelry will give them self-defense value.

Unlike the organic balance between power and beauty, the security of defensive jewelry appears to be far more important than aggressiveness. As the survey results show, more than twice as many people prefer the former as the latter, and the types of defensive jewelry that people prefer are mainly those with a higher safety factor. Therefore, the relationship between the two can be summarized as "in the case of ensuring a certain degree of security, appropriately increase the aggression of jewelry in order to achieve a good self-defense effect."

In response to the question in the questionnaire: "Which question do you want to ask first when purchasing defensive jewelry (multiple choice)?" The answers from respondents are shown in the graph below (Figure 13).

OPTIONS	PROPORTIONS
Can it effectively protect me?	82.76%
Is it easy to use?	65.52%
Will it cause accidental injury?	65.52%
Will it pass the security check smoothly?	72.41%
Is it affordable?	27.59%
Is it beautiful in appearance?	37.93%

**Figure 13. The result of the questionnaire**

It can thus be seen that, in addition to the self-defense effects of jewelry which is concerned by most consumers, more than half of them attach great importance to their security. Unfortunately, with a few exceptions, the vast majority of defensive jewelry will have major or minor problems during security checks. This may indicate that most of the current defensive jewelry designers do not have a good balance between aggression and safety. People's concept of self-defense is still stuck in "When others attack me, how can I attack back most effectively".

Blindly pursuing aggressiveness has become a misunderstanding that many designers are hard to get out of. Once again, the author needs the example of the Anubis ring mentioned above. Although this product has been loved by consumers with its fantastic concept and exquisite form, few people actually use it as a self-defense tool. There are two important reasons for this. First, whether it can pass the security check still remains unknown. Second, the probability of stabbing or scratching is far greater than that of several other examples mentioned in the article. Consumers are currently showing a relatively conservative attitude towards this type of product. They would rather keep it in a treasure chest as a collectible than wear it on their body. In contrast, jewelry with screw caps obviously has higher practical value. However, it seems that because of the heightened sense of insecurity at any time by the pointed objects, it is now recognized that the most desirable defensive jewelry to wear out is the siren and spray bottle pendants with little potential danger.

The above content fully reflects that security is far more important than aggressiveness in people's eyes. From this, another set of design philosophies dedicated to defensive jewelry can be concluded: in the case of ensuring security, appropriately increase the aggressiveness of jewelry. When the two cannot coexist, a small part of the aggressiveness can be given up for the security of the wearer. Of course, ideally, these two properties should exist simultaneously and complement each other.

In this regard, the efforts of future designers are mainly to come up with a set of real "zero safety hazards" design concepts. However, they still exist only in hypothetical conditions. In the near future, with the help of technological means and the application of innovative materials, perhaps people can really see products in this ideal state appearing on the market.

## **4. Potential problems with defensive jewelry**

### **4.1 The problem of easy application**

It is generally believed that defensive jewelry should be bestowed a quality of "implementing its usefulness as quickly as possible". In other words, a successful product can be effectively utilized to fight back against the injurer before the wearer suffers substantial bodily harm. This seems to be an easy goal to achieve. However, many people under attack do not have sufficient opportunity to use the items they wear with almost a few seconds of reaction time, disregarding the power gap between the two. For instance, people don't have enough time to unscrew the caps that hold the steel needles in a critical moment, nor do they have time to protrude the pocket knife from the groove. These actions usually take about a second from implementation to completion at the fastest. In such a short period, the gangster has every time to tie the hands of the victim. In this case, the defensive jewelry will lose its use value before one can buy time to utilize it.

Some designers seem to notice the phenomenon. The emergence of innovative defense jewelry represented by the coin knife pendant has changed the status quo to a certain degree. This microblade, with a diameter of no more than 5cm, usually

fits horizontally with the rest of the pendant. When needed, the wearer can easily detach it from the main body of by friction with just the index finger and thumb. This is undoubtedly a breakthrough in this field. The new coin knife launched by the shop “OMNIPOTENT WARRIOR” (Figure 14) combines aesthetics and safety to a new niveau. The compact shape is low profile and easy to carry, while the exquisite patterns and colors also greatly increase consumers’ interest to buy.



Figure 14. Coin knife launched by “OMNIPOTENT WARRIOR” (source: <https://m.tb.cn/h.fpmvkcW?tk=hfAN26OtJmD>)

Nevertheless, the innovation and improvement of the unit product are far from enough. The vast majority of defensive jewelry in existence still excludes itself from mass-market and hot-selling products due to their low ease of use. This will be an important problem that designers cannot avoid now and for a long time in the future.

#### 4.2 The problem of using security and effects

As mentioned above, the security of defensive jewelry is an enduring topic. Whether it’s a general question like “Will it pass security checks?” or a more personal one like “Will it cause accidental harm?” “Will it protect me effectively?”, etc. In the questionnaire, the author asked, “What is the biggest problem with defensive jewelry today (multiple choice)?” The responses received are shown in the table below (Figure 15).

OPTIONS	PROPORTIONS
They have difficulty passing security checks.	90%
They can accidentally injure the wearer or others.	70%
They can scratch property.	53.33%
They can be used in an inappropriate way.	30%
They are easily damaged.	26.67%
They are not very effective in self-defense.	70%

Figure 15. The result of the questionnaire

From the above table, it can be inferred that the deficiencies of defensive jewelry in people’s minds are mainly reflected in the aspects of safety and use effect. The respondents who chose these options accounted for the vast majority of the overall. An anonymous respondent said: “This is a difficult problem to solve, as jewelry is a special item that needs to be in close contact with people’s skin. This determines that it cannot have a substantial safety hazard. However, the vast majority of good products with prominent self-defense effects are bestowed security risks as well. Therefore, the two properties are contradictory to some extent.”

This question appears to be stuck in a dilemma. Whether it can be genuinely solved still depends on the ideas and innovation capabilities of current and future designers. With the existing technical means, it is temporarily tricky to improve the safety and use the effect of defensive jewelry simultaneously. However, the prospect is optimistic. With the advancement of technological means, it may be improved to a certain extent in the future.

### 4.3 Risk of improper application

Defensive jewelry could be exploited in reverse, a potential problem that few people think of. How an item is used and its value is determined by the user. Defensive jewelry is a protective item that ordinary people wear to prevent others from invading. However, once they fall into the hands of people with bad intentions, they will become “accomplices” or even murder weapons of criminals (Qiluyidian, 2022). How to make self-defense jewelry only held by normal people? How can we prevent them from being misused? This is a problem that still cannot be solved. This involves the improvement of the sales mechanism and a series of complex social background investigations on buyers: both of these are very huge projects, and it seems that no suitable solution has been found so far (Xiang&Wang, 2017).

Nonetheless, it's not necessary to be pessimistic about avoiding the “unproper application”. At present, the probability of this phenomenon happening is minuscule. Gangsters seem to prefer carrying fruit knives or pistols rather than this low-key form of self-defense product. However, in order to completely solve this problem, it still depends on the improvement of relevant policies.

## 5. Prospects of defense jewelry

Defense jewelry is bestowed a relatively bright future overall. It is believed that the existing safety hazards and use effect problems can be solved under the guidance of a certain technical level. People are looking forward to using defensive jewelry that is as gorgeous, convenient, and practical as those pieces in Hollywood spy movies. This may be materialized, albeit decades or even centuries in the future.

The development of innovative materials is currently a project that most designers in this field are working on. How to use unprecedented materials to improve the practicality of defensive jewelry significantly is a question that has not yet been concluded. The new materials that can be used for defense jewelry currently researched include lasers, nanomaterials, and some scrap metal extracts developed for environmental protection purposes. The emergence of these materials has made the economic and social benefits of defense jewelry to a certain degree of improvement. However, their impact on the field remains still unknown. To get the specific use of these new materials, it also depends on the relevant designers and technicians to conduct more in-depth research.

In addition to material that can be innovated to a new level, the level of technology related to it can also be improved to a certain extent. For example, the currently popular alarm pendant still has room for modification in this regard. Most attention is paid to the fact that the siren can make a loud “cry for help”, while ignoring another aspect: Can these cries for help really attract help from others? What if the people in need are in remote and inaccessible places? An anonymous respondent said: “I think the use of the siren only considers the fact that the alarm is sent, not what will happen after the alarm is issued. It is doubtful whether this ‘alarm’ is really effective.” In this case, the invisible technical support system should be accordingly improved. Establishing a link between each alarm pendant and the nearest security system in the vicinity seems like an impossible task. Whereas, with the advancement of science and technology, one must admit that anything is possible.

Defense jewelry involves personal safety, and a series of laws and regulations related to it also need to be improved accordingly. “The best state of existence for defensive jewelry is not to exist.” Under the absolute ideal state, the perfect outcome for this special type of jewelry is to disappear naturally. People don't need to worry about safety at any time, they can easily walk alone on the street or at night, and they no longer need to carry protective equipment. To move society towards this “perfect state”, some more detailed citizen security systems and laws and regulations need to be proposed. This involves a comprehensive scope of rectification and will be a rather lengthy process.

In conclusion, the overall prospect of defense jewelry can be fairly optimistic, which stems from the continuous efforts and innovations of many designers in this area. Maybe one day, in a few years, people will be able to buy and use products that are as “magical” and powerful as in the movies, or better yet, people already live in a very safe social environment and no longer need to rely on these small volumes devices to protect themselves.

## 6. Conclusion

This paper utilized research methods such as interviewing, publishing questionnaires, logging on to relevant websites and analyzing the appropriate products to conduct a preliminary study on the design concepts and potential problems of defensive jewelry. Some suggestions are also given to the current designers in this field in order to facilitate the status quo.

Defensive jewelry seems to be a field that has never been adequately studied before. Therefore, there are few systematic summary articles and methodologies in this field, causing some common problems that remain to be solved. The paper discusses the design concept of defensive jewelry in detail through examples. It is systematically divided into two systems: “the combination of power and beauty” and “the combination of aggressiveness and security”. Some specific design techniques and ideas are also clearly described in order to give designers creative inspiration and enlightenment. Then, through the analysis of the questionnaire results, the existing problems in some pieces of defense jewelry are revealed, as well as some solving suggestions. Finally, the author puts forward the prospect of this product and analyzes both the current and the upcoming situation. The future of defensive jewelry is bright, although it faces some relatively intractable problems.

As a study on jewelry of practical value, this paper partly makes up for several problems in previous works. Most importantly, it supplies, to some extent, the aridity in this “uncultivated land”. However, during the process of study, several problems are also encountered, such as the limitation of references, the inadequate investigation of related social facts. The imperfect conditions need to be improved in future investigations.

Overall, the results obtained in this study are more than rich, but the precision remains to be improved. Its highly hoped that there would be opportunities to explore this issue further in the future.

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