University of South Dakota

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2022

Anti-Counterfeiting Warnings: Do they Influence Consumer Behavior and Perception of Overt Indicators?

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ANTI-COUNTERFEITING WARNINGS: DO THEY INFLUENCE CONSUMER BEHAVIOR AND PERCEPTION OF OVERT INDICATORS?

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A Dissertation Submitted in Partial Fulfillment of the Requirements for the
Degree of Doctor of Philosophy
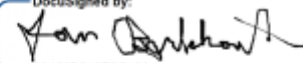
Department of Psychology

Human Factors Program
In the Graduate School
The University of South Dakota
August 2022

The members of the Committee appointed to examine the Dissertation of Elizabeth Sterling find it satisfactory and recommend that it be accepted.

Chairperson
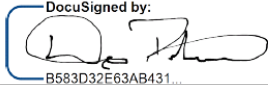
ABSTRACT

   This study examined if overt anti-counterfeiting indicators on product packages and warning labels added to the product, informing that the product might be a counterfeit, influenced participants to spend more time examining the product package for genuineness. The overt indicators used were a QR code, and a holographic security tag that were added to packages as a sticker. There was little research regarding what consumers were looking for when examining a product package to determine if the product was genuine or counterfeit. Arguments for both involving the consumers in the counterfeit identification process, and not involving the consumers in this process were found in previous literature. In this study, the participants wore a set of eye tracking glasses and were given 13 different products to examine, some with no added indicators, some with added QR code indicator, and some with holographic security tag added indicator. Half of the subjects saw the added warning label sticker, and the other half saw the same products with no added warning label. After the participants finished viewing each of the products, they filled out a survey that asked them if they thought the product was genuine or counterfeit, how likely they would be to purchase the product, how much they trusted that the product, and what it was about the product that made them rate it this way. The total amount of time that the participants spent examining the product package, as well as the total amount of time the participants spent examining the added overt anti-counterfeiting indicators on the product package were measured as well.
   The results revealed that the warning label did have an overall effect on the total amount of time that the participants spent examining the product package, and there was no difference on total time between the two types of indicators. Participants did not pay more attention to one indicator over the other. Further research will be needed to examine true counterfeit products when compared to genuine products, after the addition of the warning labels and the overt anti-counterfeiting indicators to the product package.

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Introduction

There are two schools of thought regarding consumer involvement in anti-counterfeiting technology. The first suggests that consumers do not need overt anti-counterfeiting indicators on packaging because they do not pay attention to these indicators (Chaudry & Stumpf, 2013). If overt anti-counterfeiting indicators are on both counterfeit and non-counterfeited product packages, then there is still the opportunity for consumers to accidentally purchase counterfeit goods (Krishna & Dugar, 2016). Putting overt anti-counterfeiting indicators on product packaging turns the design of the indicators into an arms race between the manufacturers and the counterfeiters. The second school of thought is that putting overt anti-counterfeiting indicators on product packaging will help consumers be able to verify if the product is a genuine or not, putting them in the loop of the authentication process. Very little research has been done to determine if consumers pay attention to overt anti-counterfeiting indicators on product packaging, as well as if they use that information to determine to purchase a product. It is also unknown what indicators consumers are looking for on the product. Currently, there are no anti-counterfeiting warnings on product packages informing consumers of the possible risk of counterfeit products. This could be an oversight on behalf of the genuine manufacturers, as in some cases the consumers of the counterfeit products are holding the genuine manufacturer accountable for not protecting them against counterfeits (Deisingh, 2004). It is also unknown if an anti-counterfeiting warning on product packages would influence consumers to be more aware of the possibility of counterfeits, and/or influence their behavior of inspecting product packages for their genuineness.

Examining how consumers interact with products with an anti-counterfeiting warning, or without an anti-counterfeiting warning, can help determine if warnings are useful for manufacturers to put as indicators on product packages. It is also important to take note of which

types of overt anti-counterfeiting indicators are noticed by consumers, regardless of if there is an anti-counterfeiting warning on the product package or not. If consumers do not examine product packages for indicators, then it is not worth the resources for the manufacturers to put these indicators on product packages. Much of the research has suggested that the knowledge the consumer has about counterfeiting can help them to choose to not purchase counterfeit goods. It is possible that even with the knowledge of the ills that counterfeiting can cause, consumers still may purchase counterfeits. Because these questions have not been examined empirically, it is impossible to make a recommendation, or provide support for either of the two schools of thought, as to if a consumer should be involved in the authentication products. At the very least, an anti-counterfeiting warning on product packages will help to prevent consumers from taking actions against the genuine brand.

Types of Products that are Counterfeited

It was commonly perceived that only luxury goods were the targets of counterfeiters, but this was not true (Field, Bergiel, Berigel, & Balsmier, 2008; Shultz & Saporito, 1996). Historically, one of the earliest recorded counterfeit incidents was in 27 BCE, when a scheme replaced an expensive Roman wine with a cheaper French wine (Phillips, 2007). The counterfeiter was caught and sentenced to death. Nearly any type of product can be counterfeited, including airplane parts (Ott, 1992), foods (Soon & Manning, 2019), medical devices (Cheng, 2009), medications (Shultz & Saporito, 1996), as well as the commonly thought of items, such as clothes, handbags, and other luxury goods (Marcketti & Shelley, 2009). Counterfeit helicopter parts have been sold to NATO, counterfeit fasteners have been found in nuclear facilities, counterfeit parts have been found in bridge joints, and counterfeit parts have been found in jet engines (Lewis, 2009). This means that counterfeit products and parts may be

the root cause of catastrophic failures and loss of lives. Ott (1992) even suggested that there had been several airplane crashes that had been attributed to counterfeit parts. Soon and Manning (2019) noted that food continued to be counterfeited, with commonly counterfeited foods being alcohol (Kuballa, Hausler, Okaru, Neufeld, Abbuga, Kibwage, & Lachenmeier, 2018), and baby formula (Berman, 2008). Counterfeit clothes, detergents, shampoos, floor cleaners, bathroom cleaners and face creams were found in Delhi, India (Express News Service, 2021). Counterfeit automobile parts could also be a concern, as very few counterfeit products, meet federal safety standards and regulations (Davis, 1991). Davis estimated that counterfeit auto parts only hold up roughly five to 25% as long as the genuine parts.

In light of the COVID-19 pandemic, there was proliferation of counterfeit COVID-19 vaccination cards (Katz, 2021). Customs and border control had already seized 7,000 fake COVID-19 vaccination cards that were intended to mimic the ones issued by the Centers for Disease Control and Prevention. Customs and border control noted that it had only been a matter of time before they found counterfeit vaccination cards. For months prior to August 2021, Customs and border control officers had been intercepting unsafe personal protective equipment, and counterfeit COVID-19 vaccinations as well. The counterfeit COVID-19 vaccination cards were traced to have come from China, and were sent through private shippers, including DHL, FedEx, and UPS. The customs and border patrol officer noted that part of the reason why they were seeing an uptick in counterfeit vaccination cards was due to restaurants, concerts, and workplaces requiring people to be vaccinated to visit. The FBI reminded the public that not only was it a federal crime to use a counterfeit vaccination card, but that it also endangered the public to use them.

Golf clubs have also been found as counterfeits (Dusek, 2021). In 2020, the largest ever counterfeit golf equipment raid seized 120,000 pieces of golf equipment. Dusek noted that part of the reason why there was so much counterfeit golf equipment was due to difficulties getting legitimate golf equipment. Some golfers were waiting six months to a year to receive golf equipment that they purchased. Dusek indicated that this gave counterfeiters motivation and opportunities to sell counterfeit golf clubs and golf club parts to consumers. Dusek reminded consumers that if the price seemed too good to be true, then it probably was a counterfeit.

Shultz and Saporito (1996) pointed out that many of the different types of counterfeits, such as pharmaceuticals, infant formula, and aircraft parts, can threaten the safety of consumers. The majority of counterfeits involve black market purchasing so no regulatory bodies ever see the products (Lewis, 2009). The profits from the sale of counterfeits had also been found to be funding terrorist activities. Lewis pointed out that not only could the funds lead to an increase in terrorist activities and innocent victims, but that the counterfeits themselves could be used as a way launch terrorist attacks. The number of counterfeits had proliferated so much that Wilson and Kinghorn (2016) stated that if a company did not think that there were counterfeits of their product, then the company was either not looking hard enough for them, or they did not have a product that was worth counterfeiting.

Even though counterfeits are the illegal reproduction of a product, counterfeit products may not be poorer quality than the authentic product (Lewis, 2009). In some cases, the factory that produces the genuine product may also produce unauthorized counterfeit versions. These counterfeit versions are called "overruns", and the factories hide the materials from inspectors from the main company. These counterfeit overruns are never seen by inspectors, so the

materials that are used are never held to stringent quality control standards. Cutting corners on the overrun counterfeits allows the factory to maximize their profits.

As an alternative to overruns, some counterfeiters ship generic items from China into the United States, and then apply the false brand logos on the products in the U.S. (Parry, 2021). In this particular scheme, the accused were applying the counterfeited brand logos in workshops in the United States, owned by the counterfeiters arrested in the scheme. They then sold the counterfeited items to both retail and wholesale purchasers, and the items included counterfeit Ugg™ Boots, Nike Air Jordan™ Sneakers, Timberland™ Boots, and Beats™ headphones.

Another aspect to the proliferation of counterfeits was the ease at which these counterfeits can be obtained (Wilson & Kinghorn, 2016). It was commonly perceived that counterfeits could only be purchased from black markets, in seedy areas, or in areas and countries where there was a lot of tourism (Lewis, 2009). Counterfeits had made it into brick-and-mortar stores (Ingrassia, 2004; Ward, 2007), counterfeits could be found for purchase on the internet (Marinković & Dunković, 2016), in flea markets and even in large department stores (Lewis, 2009). Cheng (2009) reported that counterfeit diabetes glucose test strips manufactured in China showed up on store shelves in 35 states in the U.S., as well as in many countries in Europe, the Middle East and Asia. These test strips resulted in patients getting incorrect readings of blood glucose and may have led to patients injecting themselves with more medication than they actually needed. The counterfeit test strips were so convincing that they were only caught and announced to the public as counterfeits due to a lot number on the packaging that was incorrect.

One of the most popular industries for counterfeiters was the pharmaceutical industry (Chaudry and Walsh, 1995) due to the low investment of funds required and the high income for

counterfeiters (Chaudhry & Stumpf, 2013). Deisingh (2004) stated that it was estimated that approximately seven percent of all medications across the world were counterfeit. In some countries, it was estimated that as much as 70% of all medications were counterfeit (Chaudry & Walsh, 1995). Wertheimer and Norris (2009) suggested that the majority of counterfeit medications came from India, totaling about 35% of counterfeit medication sales worldwide. Nigeria was second with a total of 23.1% of counterfeit medication sales worldwide, and Pakistan was the third largest provider, with a total of 13.3% of counterfeit medication sales worldwide. Wertheimer and Norris (2009) suggested that the problems of counterfeit medications were likely to compound on the poor, especially in poorer countries, as these were the patients who were going to be searching for medications as cheap as possible.

As with other types of counterfeits, counterfeit medications had been finding their way into the legitimate supply chain (Cozzella, Simonetti, & Spagnolo, 2012). In 2012, a counterfeit chemotherapy drug, Avastin™, infiltrated the legitimate supply chain in the United States and led to several deaths (Li, 2013). Chaudhry and Stumpf (2013) suggested that the counterfeit Avastin™ was a wake-up call for many that counterfeit medications could be a problem in the United States. The counterfeit Avastin™ was purchased from legitimate pharmacies in the U.S. (Li, 2013). Li pointed out that if the consumers of the counterfeit Avastin™ had looked closely at the packaging, they would have noticed that it was different from the typical, genuine, Avastin™ packaging that they had previously received. One of the most telling indicators that the Avastin™ was counterfeit was that the package was not labeled for distribution in the United States. However, this perspective begs a couple of questions; if consumers even bother to examine product packaging for any indicators of authenticity, and how much the consumer should be responsible for examining products for authenticity.

Chaudhry and Stumpf (2013) pointed out that contributing to the "perfect storm" of counterfeit medications and pharmaceuticals, was the amount of online illegitimate pharmacies who were fooling consumers into thinking that they were legitimate. Cheng (2009) suggested that North American consumers were particularly at risk as there was a proliferation of online pharmacies and counterfeit medications that were bypassing the legitimate supply chain. Liang (2005) suggested that even though the importation of medication into the United States was illegal, it was estimated that the citizens of the United States were spending roughly a billion dollars each year on internet pharmacies. When consumers purchased medications online without a prescription, they became a part of bypassing the very system that had been established to protect them (Mackey & Nayyar, 2017).

The problem of counterfeit medication was particularly insidious as the use of counterfeit medications could harm a patient very severely, and even lead to their death (Chaudry & Stumpf, 2013). Due to the many threats to a patient's wellbeing, Wertheimer and Norris (2009) suggested that counterfeit and substandard medications were a serious public health concern. Customs only searched a small portion of all of the products that were imported into the United States, so the estimates of counterfeit goods and medications were likely smaller than what the real problem was (Li, 2013). Chaudhry and Stumpf (2013) suggested that there was likely a great quantity of counterfeit medications that went undetected in the legitimate supply chain. Cheng (2009) noted that both name-brand and generic medications were counterfeited, and Chaudhry and Stumpf (2013) stated that medications that were highly-consumed, innovative, or well-established generics were the ones primarily targeted by counterfeiters. Counterfeiters deliberately mislabeled the medication, attempting to hide the identity of the medication, and intentionally stated that a medication originated from a different country than it did, making it difficult to

identify as counterfeit (Cheng, 2009). Wertheimer and Norris (2009) pointed out that the demand for medications was very unlikely to decrease, and the consumer was not easily able to tell the difference between a counterfeit and a genuine medication.

In the year 2019, the U.S. Customs and Border Protection Office of Trade (2019) seized an estimated $1.5 billion dollars' worth of counterfeit goods that were being imported into the United States. There was a total of 27,599 seizures, with 15,811 of those having been shipped through express mail. Fifteen percent of the seizures were of jewelry and watches, 14% were of apparel and accessories, 13% were handbags and wallets, 12% were footwear, ten percent was consumer electronics, six percent were pharmaceuticals and personal care products, five percent was sporting goods, four percent were consumer products, one percent were computers or accessories for computers, one percent was for automotive and aerospace, and another 17% were other products.

Deceptive and Non-Deceptive Counterfeiting

Deceptive counterfeiting is when a consumer unknowingly purchases a counterfeit product, whereas non-deceptive counterfeiting is when the consumer is well aware that the product that they are purchasing is a counterfeit. Both deceptive and non-deceptive counterfeits are illegal and can do societal harm (Wilson and Kinghorn, 2016). Li and Yi (2017) pointed out that deceptive counterfeits were likely to be less durable than the genuine good, and were more likely to put the consumer's welfare at risk.

Marinković and Dunković (2016) suggested that there was a difference between a consumer who knowingly purchased a counterfeit product and a consumer who unknowingly purchased a counterfeit product. They pointed out that at least the consumer who had knowingly purchased a counterfeit product had made an informed choice to purchase the counterfeit,

whereas the consumer who was unaware that they were purchasing a counterfeit may be dealing with a lower quality item and not be aware of it. The risks of a counterfeit being potentially dangerous or harmful were even greater when it was purchased online because the consumer did not have an opportunity to examine the product before buying it.

Motivations for Counterfeiters

One of the biggest motivations for counterfeiters to produce counterfeit products was because counterfeiting had been described as more profitable and less risky than drug trafficking (Huband, 2004). Counterfeiting involved minimal risks from legal action, and the amount of money needed to begin a counterfeiting operation was very low (Lewis, 2009). Prior to being caught by the FBI, one counterfeiting group made millions of dollars selling counterfeit t-shirts. Counterfeiters do not have to pay for the research and development teams to create a new product or to improve upon a product (Li & Yi, 2017). Instead, counterfeiters are creating a copy of the product, cutting out this extra cost. The internet made it even easier for counterfeiters to sell directly to consumers, as well as having access to purchase machines to create more convincing counterfeits for lower prices (Lewis, 2009). This can help counterfeiters to be able to replicate logos, and create much more persuasive counterfeit packaging, than what previous technology allowed them to create. Internet auction sites have been found to sell pill making machines, and other printing technologies (Chaudhry & Zimmerman, 2012). The internet made it easier for counterfeiters to be able to cooperate with other counterfeiters, making a larger scale operation possible. The globalization of the economy had also likely increased the capabilities of counterfeiters to reach a larger audience and had increased the motivation for products to be counterfeited (Hopkins, Kontnik, & Turnage, 2003).

Wertheimer and Norris (2009) pointed out that one of the reasons why pharmaceuticals were targeted in the first place was due to the high price that medications typically sold for. Combined with the very high profit margin, were low barriers to entry, few legal actions that could be taken against counterfeiters, making it easy for counterfeiters to make a lot of money through counterfeit medications (Chaudhry & Stumpf, 2013). Wertheimer and Norris (2009) pointed out that the reasons medications sold for such high prices, had more to do with the taxes and the mark-ups applied by the government, than the manufacturers' price. This meant that in some ways, the government mark-ups had more to do with medications being out of the reach of the poor than the cost of the making of the medication, leading to an increased incentive to counterfeit medications.

Lack of Enforcement and Criminal Ramifications. Creating or selling a product that was not an authentic product in an attempt to undermine the genuine product would mean that a person was guilty of counterfeiting (Hopkins et al., 2003). In many countries, the legal punishments for counterfeiting were not very severe, and in some countries, legal penalties did not even exist (Hopkins, et al., 2003). It was difficult for businesses and countries to take action against the actual counterfeiters themselves, as many of the false companies fell outside the jurisdictional boarders (Cheng, 2009). Due to the international nature of counterfeiting, many businesses were on their own to take legal action against counterfeiters and curb the counterfeiting of their products (Chaudhry Cordell, & Zimmerman, 2005). Legal actions and solutions against counterfeiters had historically been lacking, making the issue of businesses taking action against counterfeiters even more difficult (Chaudhry & Walsh, 1996). Penz Sequeira, and Dix, (2009) also noted that legal actions taken against counterfeiters could be extremely costly for the business, making them even less likely to take action against them.

It is commonly believed that counterfeiting was a victimless crime, even though it has been well documented and shown to not be the case at all (Wilson & Kinghorn, 2016). Legal personnel may not see counterfeiting as serious as other violent physical crimes, or property damage crimes, even though there may be as much harm, if not more harm, caused by a counterfeiting scheme (Lewis, 2009). Wilson and Kinghorn (2016) suggested that one of the reasons why counterfeiters were so successful and incentivized to continue, was due to the lack of knowledge that law enforcement, businesses, and consumers had about the crime. Albanese (2011) suggested that counterfeiters often faced low consequences for their crimes, regardless of how many people they may have hurt. Chaudhry et al. (2005) suggested that one possibility was to hold retailers who sold the counterfeits accountable for their actions. This would force retailers to be much more vigilant about examining products for authenticity before attempting to sell them.

Chaudhry et al. (2005) suggested that the lack of enforcement was one of the biggest weaknesses to prevent counterfeiting. One of the most important strategies to slow the spread of counterfeits was working at both a national and an international level to prevent and catch counterfeiters. Since the vast majority of counterfeits were imported into the United States, it was extremely difficult to take legal actions against the counterfeiters themselves (Cheng, 2009). Cheng noted that one of the particularly difficult schemes to take legal actions against was the online pharmacies selling counterfeit medications to consumers. The Food and Drug Administration (FDA) was maintaining a list of websites that were connected to counterfeit medications in hopes of informing consumers which online pharmacies sold counterfeits.

Sullivan and Wilson (2017) examined counterfeiters who were actually prosecuted from laundering counterfeits into the department of defense (DOD). Five people involved in three

different schemes were sentenced to probation rather than to prison, and seven schemes had un-indited co-conspirators. Lewis (2009) noted that even though there had been a number of steps taken to deter counterfeiting, the practice was on the rise.

Negative Impacts from Counterfeiting

Counterfeits can have serious negative effects on the legitimate businesses who own the trademark, the economy, and on the consumers themselves (The Financial, 2021). Consumers have a tendency to purchase counterfeit goods because they are cheaper than the original items, but they may be doing so without knowing the possibilities of harm that they can have on these different systems. For example, if the consumer were to purchase the product from the legitimate company, the legitimate company would be paying taxes on their revenue from sales, whereas a counterfeiter will not be paying taxes on the sale of the product. The taxes from the revenue on the sale from the legitimate business will go to fund roads, schools, and hospitals. Sales tax is estimated to represent 70% to 90% of financial losses that the replacement of genuine economic activity, with an estimated $89 billion dollars every year being lost from sales tax to counterfeits. With counterfeits being an unfair, illegal competition with the legitimate business, the business may have to cut jobs, with an estimated 4.2 million to 5.4 million jobs expected to be lost to counterfeits in the year 2022. Counterfeits can also pose a serious risk to the consumer of the counterfeit as well. In the year 2012, an estimated 17,000 Russians died from the possible ingestion of counterfeit alcohol that had hazardous ingredients, and an estimated 120,000 children in Africa died in 2013 due to counterfeit malaria medications. To top it off, counterfeiting can also fund further more serious crimes, strengthening criminal organizations.

Businesses Impacts from Counterfeiting. There were many different ways that counterfeiting could affect the genuine brand, and these effects were some of the most obvious

negative effects from counterfeiting (Lewis, 2009). Shultz & Saporito (1996) suggested that companies lost, on average, between 10%-20% of sales to counterfeits each year, and it was possible this was rising. Counterfeits could potentially suppress the creativity and innovation of the company whose products were counterfeited (Wilson & Kinghorn, 2016). Counterfeits could potentially lose revenue for the company (Marinković & Dunković, 2016), and create unfair competition between the genuine brand and the counterfeit brand. It was possible that consumers who unintentionally purchased counterfeits had a poor experience with the counterfeit, making them less likely to purchase the genuine product and brand in the future (Wilson & Kinghorn, 2016). It was important for businesses to consider what their needs were, and what they could do to help prevent their products from being counterfeited in order to protect the future of their company, as well as the consumers that used their products (Jotcham, 2005).

When businesses trademarked a brand, a saying, or an image, it gives the owner the sole right to that trademark (Marinković & Dunković, 2016). The primary function of a trademark was for the customer to be able to tell the difference between two goods, services, or brands. One of the reasons why the incidence of counterfeiting at the time was going up, was due to the fact that the number of trademarks being registered was also going up (Chaudhry, et al., 2005).

Marinković and Dunković (2016) pointed out that if a customer unintentionally purchased a counterfeit product of a brand, it could cause the consumers to complain about the counterfeit item to the legitimate company. This could leave businesses with the options to refuse to service the customer because the item was a counterfeit, or to refund the customer, both of which could potentially erode the customer's loyalty to the genuine brand (Lewis, 2009). Amar, Ariely, Carmon, and Yang, (2018) had participants work with items they were told were counterfeit, and other items that the participants were told were genuine, and found that the

counterfeit could infect the genuine item with a moral disgust in the participants. This should be particularly concerning to businesses, as if consumers mix the ownership of counterfeits and genuine goods, their experience with the genuine good may be degraded by the similarity to the counterfeit.

Since businesses cannot expect that governments will automatically protect their intellectual property, it was important for them to take steps and strategize on how to protect their products and their customers from counterfeit products (Shultz & Saporito, 1996). Some businesses understood that the counterfeiting of their products was always a risk, and they created a plan to help diminish that risk, as well as to mitigate the effects of counterfeiting (Wilson & Kinghorn, 2016). Wilson and Kinghorn suggested that the vast majority of anti-counterfeiting strategies that were being implemented in businesses were reactive in nature and had found that the most effective strategies were proactive in nature. The strategy that was implemented may depend upon what type of product the business sold, or what capabilities the business may have financially (Shultz & Saporito, 1996). There were many different areas of a business that may be able to help with strategies against counterfeiting (Wilson & Kinghorn, 2016), including the marketing department, the quality assurance department, the packaging design department, the manufacturing design department, the quality assurance department, the human resources department, and any warehouse facilities and supply chain management that the company may have (Shultz & Saporito, 1996).

In 2020, Amazon™ seized and destroyed over two million counterfeit products that were attempting to be sold on their platform (Brodkin, 2021). The products were destroyed by Amazon™ so that they could not be resold on a different platform. However, these products were only the ones that were fulfilled by Amazon™, so any other counterfeits that were on the

platform and not fulfilled by Amazon™ were not destroyed. There were also counterfeits that were not reported by consumers, making it difficult for Amazon™ to know how many counterfeits were actually on their platform. Amazon™ had been in legal battles where they were attempting to argue that they should not be held responsible for the counterfeits on their platform, and they had lost some court cases where they had been held responsible for the counterfeits on their platform. Amazon™ reported that in 2020, they employed more than 10,000 people, and had spent over $700 million to help protect their platform from counterfeits and abuse. Two of the solutions that they had been implementing were stricter seller verification rules, to prevent counterfeiters from having store fronts on the site, and monitoring product details to prevent bait-and-switches. Amazon™ also established a Counterfeit Crimes Unit to help them report counterfeiters to the governments of the counterfeiter's origin, as well as to take legal action against the counterfeiters themselves. In 2020, Amazon™ reported that they had blocked six million possible counterfeiters from creating accounts, and blocked more than ten billion suspected bad listings from being published.

Wilson and Kinghorn (2016) argued that damage to the brand's image could have future long-term consequences, as there would be a chance that it could hurt the company's overall financial success. They also pointed out that it was possible that the company could be taken to court by consumers for not protecting them from counterfeits. To reduce the possibility for these negative effects, Wilson and Kinghorn suggested that companies take a total business approach to counterfeits, and attempt to take steps to prevent their products from being counterfeited in the first place.

Economic Impacts from Counterfeiting. Economically, local communities and larger government systems were not collecting taxes on the sale of counterfeit products, on the

importation of counterfeit products, or taxes on the income of the business (Marinković &

Dunković, 2016). Counterfeiting may harm society at large, by reducing overall economic

output, and potentially reducing overall competitiveness in the global market (Bloch, Busy, &

Campbell, 1993). It may also lead to consumers losing their confidence in their home nation's

industries. Medication counterfeiting could also have an effect on society and the economy

through increased drug resistance and further mutations of viruses and bacteria (Wertheimer &

Norris, 2009). Wertheimer and Norris suggested that this was particularly concerning with

HIV/AIDS treatments, and noted that there was not enough data to know how much counterfeit

medications had affected drug resistance.

   Consumer Impacts from Counterfeiting. Far less obvious at first glance to the problem

of counterfeits, was the adverse ramifications that the counterfeit products may have on the

consumer who purchases them (Lewis, 2009). In counterfeited foods, undisclosed ingredients

may be harmful to the consumers (Soon & Manning, 2019). Toxic substances may have been

used to manufacture counterfeit products, which may leave a layer on the product or create a

harmful off gas that could harm the consumer (Assi, Thomas, Haffar, & Osselton, 2016).

Counterfeit medications may lead to patient death (Lewis, 2009), or patients taking counterfeit

medications may not have their diseases remedied that are normally easily cured (Wertheimer &

Norris, 2009). Counterfeit medications could also lead to the patient's illness worsening, or may

even make the patient sick with something else from the toxic ingredients (Deisingh, 2004). The

counterfeit medication may not even have all of the active ingredients, and may instead contain

ingredients such as chalk, metal, or other toxic chemicals (Cheng, 2009). Alarmingly, Cheng

suggested that the death toll from consumers using counterfeit medications was growing.

Williams (2021) noted that even though consumers would be tempted to purchase the cheaper option of a product, that there were serious dangers that could come to consumers from purchasing counterfeit products. Williams pointed out that part of what factors into the cost that the consumer pays for the genuine product was the cost to make sure that the product was safe for consumer use, and counterfeiters do not follow these norms. While some products, such as counterfeit handbags and counterfeit shoes, do not pose an immediate risk to consumers, other counterfeits such as counterfeit automobile breaks and seatbelts, counterfeit COVID-19 masks, food and pharmaceuticals, do pose an immediate risk to the consumer's health and well-being. Williams noted that the types of products that were counterfeited had proliferated, meaning that consumers were likely to run into counterfeits of just about any type of product. Of course, the danger can also go beyond health and safety concerns, as consumers who are purchasing counterfeit products are also funding dangerous criminal networks, and poor working conditions in the factories that the counterfeits are made in.

Li (2013) pointed out that the pharmaceutical industry had the potential to have the most devastating effects on consumers. Given that the internet made it much easier for consumers to get counterfeits, the legitimate supply chain was no longer the only source of consumers obtaining counterfeit medications. Mackey and Nayyar (2017) stated that as long as consumers were able to obtain counterfeit medications, either intentionally or unintentionally, they shouldered the burden of checking if the medication was genuine, and could pay the ultimate consequences if it was not.

Positive Impacts from Counterfeiting

Some researchers argued that there were positive effects from counterfeit goods entering the market (Qian, 2008). Kogan, Ozinci, and Perlman (2013) pointed out that even if consumers

discontinued to purchase counterfeits, it did not directly mean that the businesses being counterfeited would begin to make more profits, as the consumers of the counterfeits may not have been consumers of the genuine brand. Research by Scherer and Weisburst (1995), Bessen and Maskin (2009), and Qian (2007), found that intellectual property protection was not enough to stimulate innovation, while research by Aghion, Bloom, Blundell, Griffith, and Howitt (2005), suggested that companies may innovate in order to deal with unfair competition such as counterfeiting. This research suggested that there may be some positive effects of counterfeiting, and that there might be an optimal amount of intellectual property laws (Gallini, 1992).

In contrast to much of the research and thought on the negative effects of counterfeiting, Li, Sethi, and Zhang (2012) completed a study that found that the quality of both counterfeits and legitimate goods increased when there was competition between the legitimate business and the counterfeit business. They indicated that they found that the "free-riding" by the counterfeiting business may actually benefit the genuine manufacturer's supply chain.

Work by Scherer and Weisburst (1995) and Kortum and Lerner (1998) suggested that the protection of intellectual property may not be as stimulating to innovation as argued. Qian (2007) argued that in countries with lower than average education levels, such as China, intellectual property may not be as stimulating to innovation as in other countries where the average level of education was higher. To demonstrate this idea, Qian (2008) competed a case study in China where the government had diverted anti-counterfeiting funding away from the fashion and footwear markets, leaving businesses to fend for themselves against counterfeiters. Because the companies were completely on their own, they had to come up with creative ways to signal to consumers that their product was the genuine product and not a counterfeit. Some of the strategies included; changing the product to stand out, adding attributes that would be difficult

for counterfeiters to imitate, licensing outlets, creating brand protection offices, and using price signals as a way to indicate to consumers that it was genuine. Although the companies were innovating to protect their products from counterfeiters, not all the effects were good, as the price of the genuine products rose about 45% in the two years following the government's diversion of funds. Qian did recognize that the counterfeiters that were creating these fake products did consistently use lower quality materials and had cheaper prices to attract customers, and thus may be different from when a counterfeiter was trying to sell a deceptive counterfeit to a consumer.

International and Cultural Differences with Counterfeiting

One of the difficulties in curbing counterfeit growth was different ideologies across different countries (Shultz & Saporito, 1996; Phillips, 2007). Some countries did not see it as important to protect intellectual property, and may intentionally engage in, or continue to support, counterfeiting practices in their country (Shultz & Saporito, 1996). Even with the World Trade Organization agreement, there may be some loopholes that would allow countries to turn a blind eye to the counterfeiting within their borders, and not be held accountable for it. Counterfeiting was culturally acceptable in many parts of Asia, and in some places, it even represented an important part of the economy (Bloch et al., 1993). Countries that were still developing may also have difficulty catching counterfeits or preventing them from entering the supply chain (Wertheimer & Norris, 2009).

One of the most delinquent countries in carrying out anti-counterfeiting ideals was China (Phillips, 2007), with the majority of counterfeits being seized in the United States having an origin of China (Chaudhry et al., 2005). Lewis (2009) suggested that it was the practice of communist governments to maximize employment level, which would be in direct conflict with

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shutting down counterfeit factories. Counterfeit factories may be the largest employer in the area, disincentivizing the government to shut them down (Phillips, 2007). At one point, the counterfeiting industry was so lucrative in China, that if the government were to completely eliminate the practice, it could have had serious negative effects on the economy of the whole country. In order to stem the flow of counterfeit goods, it was necessary to have cooperation at the international level (Chaudhry & Stumpf, 2013).

Anti-Counterfeiting Methods and Technologies

  Supply Chain Issues with Counterfeiting. There had been an alarming trend of counterfeits entering the legitimate supply chain and thus, into legitimate businesses (Marinković & Dunković, 2016; Marron & Steel, 2000; McGaughey, 2002). Wertheimer and Norris (2009) stated that marketers and manufacturers were trying to stay one step ahead of the counterfeiters by coming up with numerous ways to label the genuine product so that it could be tracked and traced throughout the supply chain. Li and Yi (2017) suggested that a proliferation of counterfeits in the legitimate market could jeopardize the whole supply chain in the United States.

  Two of the supply chains that were the most vulnerable, and potentially the most devastating for counterfeits to infiltrate, were the pharmaceutical supply chain (Li, 2013), and the food supply chain (Jotcham, 2005). These products did not move directly from the manufacturer to the supplier, and had many stops along the way (Li, 2013). This left the products vulnerable to being tampered with, mixed in with counterfeits, repackaged, or have the genuine item taken out of the legitimate package, and the counterfeit product put back in (Bansal, Malla, Gudala, & Tinwari, 2013). Notably, for the medication supply chain, Lewis (2009) suggested that some of

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the holes in the distribution chain had been closed in order to prevent counterfeits from being

smuggled into the legitimate market.

It is not difficult for those with malicious intent to find their way into the food supply

chain and contaminate the products before they get to the supplier (Jotcham, 2005). Jotcham

suggested that the food supply chain could become an attractive opportunity for terrorists and

criminals as a way to obtain money and create mayhem. For the medication supply chain,

patients shouldered the burden of checking if the medication was genuine, and would pay the

ultimate consequences if it was not (Mackey & Nayyar, 2017). Jotcham (2005) pointed out that

if there was a tighter supply chain it would reduce the amount of illegitimate products that get to

consumers and reduce the need for anti-counterfeiting technology on products.

Sullivan and Wilson (2017) completed a study examining how counterfeits made it into

the Department of Defense (DOD) supply chain. The counterfeits getting into the DOD supply

chain could threaten national security, as well as compromise critical operations, while placing

the lives of military members at risk. The size and the complexity of the DOD supply chain left

open many opportunities for counterfeit products to find their way in. Typically, the DOD

awarded contracts to suppliers to ensure that the products were good quality as well as having a

good price. However, this was not always the case, as the supplier may accidentally fulfill a

contract with counterfeit parts. Sullivan and Wilson examined publicly filed counterfeiting cases

within the DOD for their data. They pointed out that the publicly reported data did not show the

full extent of the problem of counterfeits in the DOD supply chain, as there had been a lack of

reporting of suspected counterfeit products and parts. It was possible that this lack of reporting

had something to do with a lack of understanding of how to properly report suspected

counterfeits. There also might have been a lack of standardized reporting procedures across the DOD supply chain.

The DOD defined counterfeits as a product or a part that was falsely claimed to be from the genuine manufacturer, falsely claiming that parts were made up to standards when they were not, the misrepresentation of the age or the origin of the parts, and fake packaging for the products or parts (Sullivan & Wilson, 2017). In the researchers' search for publicly reported counterfeiting schemes in the DOD supply chain, they found a total of 11 different schemes. Three of these schemes included counterfeit engine parts, five involved counterfeit electrical circuits, two involved counterfeit computer networking components, and one involved counterfeit batteries. The counterfeit battery scheme was noteworthy because it was a sale of $2.6 million U.S. dollars worth of counterfeit batteries and battery assemblies. These counterfeits were sent to the U.S. Navy, and they were used as emergency backup batteries for nuclear submarines, minesweepers, and ballistic submarines. The time that the counterfeit schemes lasted was between two and seven years. Sullivan and Wilson suggested that not only do the counterfeits have the potential to harm military personnel, but they can also create financial and emotional hardship to the business's owners, who unknowingly purchased the counterfeits and then sold them to the DOD supply chain.

Tracking and Tracing Technology for Counterfeiting. There were two different ways that anti-counterfeiting technology could be used. The first was indicators on the actual product or the product package to help consumers, manufacturers, or workers in the supply chain determine if an item was genuine or not. The second way was through tracking and tracing genuine items through the supply chain (Li, 2013). Tracking and tracing anti-counterfeiting techniques could help to prevent counterfeits from entering the legitimate supply chain, as well

as weed out counterfeits that may have gotten in. Jotcham (2005) pointed out that it was possible to use tracking and tracing technology to help correctly identify what products may need to be recalled if they were thought to be contaminated.

Commonly used tracking and tracing technologies included radio frequency identification (RFID) tags (Li, 2013), electrical power controls (EPCs), barcodes, mobile authentication systems (Mackey & Nayyar, 2017), and block chain technology. One of the biggest benefits of RFID was that the majority of the actual tracking and tracing was done automatically, as the information was stored electronically, tracked electronically, and allowed the companies to access the data at any time. Mackey and Nayyar also suggested that machine learning and online pharmacy verification systems could help to prevent counterfeit medications from getting into the legitimate supply chain.

By 2010, the United States government was requiring all genuine drug packaging to have an RFID tag incorporated into it (Cheng, 2009). While this was a great start to tracking and tracing medications through the supply chain, many experts agreed that the RFID tag would not be enough to stop the flow of counterfeit medications through legitimate channels. Cheng pointed out that counterfeiters could acquire discarded genuine packages and package the counterfeit medication into it as a way to bypass the RFID tag requirement. Cheng suggested that more needed to be done in order to successfully secure the medication supply chain, as well as having the capability to track and trace genuine products through the supply chain.

Implementing these types of anti-counterfeiting methods would be difficult. Mackey and Nayyar (2017) suggested the difficulty of implementing an RFID tracking for all products was in part due to efficiency, usability, and security problems with the technology. They thought that mobile tracking systems could be cost effective and could provide suppliers with a real time

update of the location of the product. A mobile tracking system could also be used to help assist distributors with medication errors, and may even help to support automated refills as well as product recalls. Mackey and Nayyar pointed out some drawbacks to the mobile tracking systems, as to be secure they would need the technology to be adopted at multiple points in the supply chain, and it may require regulatory mandates before manufacturers would adopt the technology to prevent counterfeits from getting into the supply chain.

Blockchain technology was still a relatively newer technology that was being used to track and trace products through the supply chain (Mackey & Nayyar, 2017). Mackey and Nayyar stated that it was a distributed digital ledger that showed the viewer continuous transaction information for products. Jotcham (2005) pointed out that food manufacturers may need to be creative in their approaches to not only tracking and tracing technologies, but all types of anti-counterfeiting technologies, as these technologies could be expensive to implement. Tracking and tracing products was only one of the ways that manufacturers could help prevent counterfeits getting into consumer's hands.

Covert Anti-Counterfeiting Technologies. Attempts to diminish the distribution of counterfeit products had included both overt and covert indicators of product authenticity (Shah, Prajapatia, & Agrawal, 2010). Covert indicators were typically known by the manufacturer and those along the supply chain to determine if the product that they had received was a genuine product or a counterfeit (Li, 2013). Examples of covert anti-counterfeiting indicators included RFID tags, patterns on the product or packaging that could only be seen under a certain light or magnification, and/or a specific color of the product that must be verified by using a colorimeter (Rodomonte, Guadiano, Antoniella, Lucente, Crusco, Bartolomei, & Muleri, 2010). Soon and

Manning (2019) suggested covert anti-counterfeiting indicators that are used to secure food products included security threads, RFID tags, fluorescence artifacts, and intaglio printing.

Covert anti-counterfeiting indicators were much harder for counterfeiters to copy, but covert indicators generally did not work for consumers to be able to verify a product. In fact, frequently, covert indicators were not known about by the consumers at all, and are well controlled within the business and supply chain to help prevent the information from getting to the counterfeiters (Li, 2013). Some of these technologies allowed the product to be authenticated, tracked, and traced during its travel to its destination (Soon & Manning, 2019). Cozella et al. (2012) believed that a combination of covert, overt, and tracking and tracing technologies would help prevent the majority of counterfeit medications from finding their way into the legitimate supply chain. Specifically, they suggested that that the combination of different types of indicators helped to create a unique pattern of indicators that would make it more difficult for counterfeiters to reproduce exactly.

One subtype of covert technologies are forensic anti-counterfeiting marks (Shah et al., 2010). Forensic anti-counterfeiting techniques are even more secretive than their covert cousins, as these were typically only known by the company of the genuine item. Forensic anti-counterfeiting technologies are the biological, chemical, and physical markers and makeup of the genuine product (Deisingh, 2004). These types of covert anti-counterfeiting markers were only revealed on a need-to-know basis, as they would allow the counterfeiters to recreate the exact makeup of the product, making it even more difficult to determine which was genuine, and which was fake. These types of technologies were used to determine which product was counterfeit in a legal situation. These types of covert anti-counterfeiting indicators are not able to be accessed by the consumer under normal circumstances.

Cozella et al. (2012) completed a study where they examined how effective a white-light speckle on packaging was as a covert anti-counterfeiting technique. The speckle was printed in ultraviolet ink and it was found that this speckle pattern could be seen in a specific lighting, even if the package had been written on or damaged. They thought that the white light speckle technique would allow each medication package to be unique and thus, resistant to being easily counterfeited. Cozella et al. suggested that in tandem with other types of covert and overt anti-counterfeiting indicators, the white-light speckle on medication packaging could help to prevent counterfeits from getting into the legitimate supply chain.

Rodomonte et al. (2010) thought that using a colorimeter on medication packaging, or on medication tablets themselves, could be a quick and inexpensive technique that could be used to find counterfeits. They found that colorimeters were precise enough to tell apart counterfeits and genuine products based on the colors on the product packaging, but that the results varied for the actual mediation tablets. If the medication tablet was too convex, then the colorimeter was not consistent enough to be able to tell apart the counterfeit tablets and the genuine tablets. Rodomonte et al. concluded that a colorimeter may be a good solution for a portable, inexpensive way to determine if a medication may be counterfeit and needed to be examined more closely.

Overt Anti-Counterfeiting Technologies. Unlike their covert counterparts, overt anti-counterfeiting technologies were visible on the product package, were obvious to consumers, and were meant to make it easy for consumers to authenticate the products (Li, 2013). Commonly used overt technologies included holographic stickers, color changing ink, barcodes, serial numbers, tamper evident packaging, and watermarks (Ting & Tsang, 2013). Typically, manufacturers use a combination of both covert and overt anti-counterfeiting indicators for cost

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effectiveness (Li, 2013). This made it difficult for the consumer to identify if a product was genuine, purely by the overt indicators on the packaging. In spite of this, overt anti-counterfeiting indicators were still used as a last line of defense against counterfeits being purchased, ingested, or used by consumers (Cheng, 2009).

Combining several different overt anti-counterfeiting indicators may help consumers to be able to more quickly verify the authenticity of the product (Ting & Tsang, 2013). This was the goal of Ting and Tsang's Watermark RFID based Self-Validation System (WARDS), that not only helped consumers to verify the authenticity of the product, but could also be used to track and trace the genuine product as it traveled through the supply chain. They incorporated an RFID tag, a digital watermark, and a product registration system, and completed a pilot study of the WARDS system. On the consumer end of things, it simplified the authentication process from many complicated steps into four easy steps, reducing the amount of time that the consumer needed to put in to verify the product. Ting and Tsang also thought that this type of system may help to tighten supply chain security, as it focused on both the prevention of counterfeits entering the supply chain, and detection of counterfeits throughout the supply chain.

The quick response (QR) code was an upgraded version of the barcode, and was able to store information in both the horizontal and the vertical axes, meaning it can hold much more information within it over the traditional barcode (Krishna & Dugar, 2016). The QR code was also dirt resistant, damage resistant, and could be printed much smaller than the traditional barcode could, to open more room on product packaging, or to reduce the costs to create a tag for the QR code. Krishna and Dugar suggested that the QR code could be used as unique identifiers on products, could be used to track and trace products through the supply chain, and could allow consumers to authenticate products themselves. They stated that one of the difficulties that

luxury manufacturers had, was that consumers would send in a product to be verified, meaning that the product had to be shipped out and examined by the genuine company. If each QR code was only able to be scanned once, then it would be much more difficult for counterfeiters to copy. If the QR code had been previously scanned or was a copy of a genuine QR code, then the device could inform the consumer that the code had been previously scanned, or that it was not a legitimate item. By allowing the consumer to be involved in the verification process, Krishna and Dugar thought this could help to cut down on some of the consumers who were looking to have their items verified.

Owing to the fact that food packaging may be reused, Soon and Manning (2019) indicated that businesses would need to be creative in their use of overt anti-counterfeiting indicators on food items. One of the most commonly seen ways to reuse packaging was by refilling old alcohol bottles with a counterfeit alcohol, resealing them, and then selling the counterfeit alcohol. There was a technique that was being used by some alcohol companies where a tamper evident tag was used on the alcohol bottle's label, that would tear when the bottle was opened. This was called a Near Field Communication (NFC) tag. There were other brands of genuine alcohol manufacturers that were using holographic stickers in the same way to show that the bottle had been previously opened. Both of these techniques would prevent counterfeiters from reusing the old packaging to put counterfeit alcohol in, as it was obvious that the bottles had been previously opened. Watermarks were another indicator that could be used for food packages but the consumer needed to know that the watermark was on the label, and where it was on the label to be able to verify the product.

Spink, Singh, and Singh (2011) had a unique idea of where to put anti-counterfeiting technology on product packages. They suggested that the anti-counterfeiting measures could be

put near, or within the warning labels on product packages. They emphasized that this technique would really only work with consumers who were intending to purchase genuine products, or searched the package for indications that the product was genuine. When it came to pharmaceuticals, there was nothing in the warning label to suggest to consumers that they may need to be cautious about counterfeit medications. Spink et al. pointed out that the warning labels on product packages were supposed to include all of the risks associated with the use of the product, and one of those risks was the accidental use of counterfeits. There were also no instructions within warning labels on medication products, on how to authenticate that the item.

After an extensive literature review, Spink et al. (2011) concluded that in general, consumers do not read warning labels. In spite of this, however, they suggested that there was still value in putting anti-counterfeiting warnings on packages, as this could prevent consumers from taking actions against the genuine manufacturer. Consumers who were concerned about counterfeit medications and counterfeit products were rising, and a warning label or instructions to authenticate products could help these people to purchase the genuine product. Spink et al. also suggested that it was possible that an extra warning on the label may help those who were less motivated to take action to verify that the product was genuine.

Despite the abundance of overt anti-counterfeiting indicators, and the cheapness at which businesses could use them, there were still drawbacks to only using overt anti-counterfeiting technology (Shah et al., 2010). Because they are obvious to consumers, they are also obvious to counterfeiters, making them much easier for counterfeiters to copy (Li, 2013). Overt anti-counterfeiting indicators should also be changed often, in hopes of staying one step ahead of the counterfeiters (Kilcullen, 2016). Overt techniques needed to have high security, and effective destructive techniques, so that counterfeiters were not easily able to recycle overt indicators to

suggest that a counterfeit product was a genuine one (Li, 2013). Shah et al. (2010) pointed out that even the highest quality barcodes were still relatively easy for counterfeiters to copy. If consumers were not aware that a tamper evident technology was on the product package, or did not know what to look for, such as a torn holographic sticker (Shah et al., 2010), then it would be possible that consumers could still purchase and use counterfeit products (Spink et al., 2011; Stilwell & Rudolph, 1989).

Research by Yuetao (2016) found that overt anti-counterfeiting indicators on counterfeit product packages were enough to confuse consumers into thinking that the medication product was genuine. Yuetao suggested that some of the overt anti-counterfeiting indicators that had been implemented were not sophisticated enough to prevent consumers from accidentally purchasing counterfeits. To help prevent confusion, Yuetao stated that when a manufacturer puts an overt anti-counterfeiting indicator on a product package, they needed to consider the consumer's perceptions of the indicator if they were to see the indicator on a counterfeit product, and thus, be cautious about which ones they put on product packages.

Li (2013) suggested that the best anti-counterfeiting technologies typically had four main features. These four features were: being difficult to recreate or falsify, being easy to identify without needing special equipment, being hard to reuse, and being tamper evident. Li noted that there were some authentication technologies that were expensive and sophisticated, and that there were other technologies that were low cost and were user friendly. Chaudhry et al. (2005) suggested that several different strategies needed to be used in order to combat counterfeiting. Some of these strategies included both overt and covert anti-counterfeiting indicators, punishing retailers who sold the counterfeits, lobbying for better intellectual property laws, and working with governments to seize counterfeits.

Consumers and Counterfeits

Consumer Perceptions of Counterfeiting. In many social and public circles, counterfeiting was still viewed as a victimless crime (Cheng, 2009). Part of this may have had to do with consumers not being educated enough about the ills of counterfeiting, and so one of the solutions may be to educate people about the negative effects of counterfeiting. In some circles, it was considered fashionable to own a counterfeit item (Phillips, 2007). There were many ways that consumers could be harmed through counterfeit products, and Cheng pointed out that consumers needed to be aware that they may come into contact with counterfeits as the consumers were the last barrier against harm from counterfeit products to themselves, and those they may be responsible for. Without change to how the public and consumers viewed counterfeiting, it would continue to run rampant, as the demand would not lessen.

Bian and Moutinho (2011) conducted a survey of participants who were walking into a supermarket. They found that nearly 47% of the participants had knowingly purchased a counterfeit product at least once. They found that the counterfeit branded products did not have an effect on the consumer's perception of original branded products. In fact, Bian and Moutinho found that consumers who owned counterfeit products had a more favorable view of counterfeit products than the participants who did not own counterfeits. Consumers had a security concern with counterfeit products which was something they had less of with a genuine product. Bian and Moutinho concluded by arguing that counterfeits were not only products, but brands that could drive consumer loyalty to the counterfeit products.

Field et al. (2008) replicated a study that was done previously on if consumers could tell the difference between genuine products and counterfeit products (Field, 2000). Field et al.'s (2008) experiment had their participants attempt to discern which out of three identical products

was the one genuine product. The participants saw two different types of products, pairs of sunglasses and woman's watches. The participants completed a demographic inventory that also asked them if they had ever purchased a counterfeit product, or ever intended to purchase a counterfeit product. Interestingly, Field et al. found that the consumers were better able to tell the difference between the counterfeits and the genuine products for the watches, than for the sunglasses. Forty-three percent of the participants incorrectly identified a pair of sunglasses as genuine, when it was in fact, counterfeit. When asked if they had ever purchased a counterfeit in the past, 46.3% of the participants had knowingly purchased a counterfeit product, and 63% intended to purchase a counterfeit product in the future. A total of 18.9% of their participants noted that they had unwittingly purchased a counterfeit item in the past. Field et al. concluded by suggesting that the difficulties that consumers may have when attempting to tell apart a counterfeit item from a genuine item may be product specific, and that this inability to discern if the item was genuine or not should be concerning to manufacturers.

Assi et al. (2016) examined the attitudes of consumers and patients towards purchasing medications, dietary supplements, and cosmetics online. They also investigated their participant's knowledge about the product's effects, the authenticity of the products, the toxicity of the products, as well as if they had experienced counterfeit lifestyle products. A total of 65% of their participants had purchased lifestyle products from the internet, and the main websites that the participants reported using were Amazon™, eBay™, online retailers, and online pharmacies. The majority of the products that the participants purchased were cosmetics, followed by dietary supplements, with medication products as the lowest percentage of lifestyle products purchased online. The main reasons that the participants gave to justify the purchase of products online were; convenience, lower cost, and an easier alternative to purchasing the

product in the store. Only two percent of the participants noted that purchasing the products online saved them the embarrassment that they would have to purchase the product in stores. Over half of their participants were aware that there were counterfeit lifestyle products being sold online, and the sources of this information varied from participant to participant. Thirty-eight participants reported having had an experience with a counterfeit lifestyle product, and only three of these participants reported the product to the authorities. When asked how they were able to identify that the product was a counterfeit, the participants stated that they would look at the product's packaging, the appearance of the product, and the claim of the label on the product. A few participants stated that they would have known it was a counterfeit based on the side effects, or the product's efficacy.

The participants stated that they were aware of the risks that came with counterfeit lifestyle products, but 14% of the participants suggested that it was acceptable to take the risk of purchasing a counterfeit product in emergencies, such as when there may be a shortage of medication, or when they may be short on finances (Assi et al., 2016). Twenty-three of the participants stated that they had an adverse reaction from the use of a counterfeit product that they had purchased from the internet. Only one of the participants who indicated that they had ill effects from the use of the counterfeit lifestyle product stated that they were treated for the adverse effects, and only four of the participants reported the adverse effects to the authorities. Fourteen percent of their participants reported using online pharmacies, and 16% of their participants could identify the logo for licensed online pharmacies. While Assi et al. found that there were relatively low amounts of adverse effects from counterfeit lifestyle product use, more than three-quarters of the participants believed that counterfeit medications could be harmful or lethal to them.

Bloch et al. (1993) completed a study that asked the participants to judge a counterfeit shirt in comparison to two real ones on several different things. One shirt was a designer shirt with a high price, one shirt was a counterfeit version of the designer shirt, and the third shirt was priced at the same amount as the counterfeit but did not have the logo. The participants judged the counterfeit shirt as a better value for the money. Bloch et al. noted that this suggested that consumers purchased counterfeits because they were getting the prestige of a designer label without having to pay the extra cost. The participants who chose the counterfeit shirt saw themselves as being less well off financially, less confident, lower status, and less successful, than the persons who preferred the designer label shirt. They also found that the participants who purchased the counterfeit shirt rated themselves as less successful and of lower status than the participants who purchased the non-branded, non-logoed shirt. Bloch et al. concluded by noting that even though they had told their participants that counterfeiting was illegal, over one third of them still chose to purchase the counterfeit product. They stated that this should be very concerning for managers involved in the creation of genuine items.

Penz, Schlegelmilch, and Stöttinger (2009) conducted a survey in Austria, Mexico, Slovenia, and the Czech Republic. They measured the consumer's attitudes towards counterfeits, their intention to purchase counterfeits, how likely they were to be embarrassed to be seen with a counterfeit, their knowledge about counterfeits, and how ready they were to take risks to purchase a counterfeit. They found that the price being perceived as a very good deal had a strong impact on their desire to purchase counterfeits, with the exception of the participants in Mexico. The participants were more likely to purchase counterfeits if the discount on the product was much higher. They noted that all other attitudes towards counterfeiting, including the anti-big business sentiments, the perceived efficiency of counterfeits, and the potential for

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embarrassment, only had an irregular effect on the intention to purchase counterfeits. The attitudes towards the negative impacts that counterfeits had on research and development at the genuine companies did not have an impact on if the consumer intended to purchase counterfeits. They did find that the more that the consumers knew about the negative impacts of counterfeiting, the more likely they were to find it difficult to rationalize their behavior. Penz et al. noted that informing the consumers about how counterfeits were made, and what negative impacts they had, may help to change their attitudes about purchasing counterfeits. They concluded by suggesting that consumers had become self-confident in their relationships with counterfeiters, and that they may mix the ownership of counterfeits and genuine products.

      Consumer Cognition and Decision Making about Counterfeits. Many consumers may not even question if a product was authentic when they were making their decision to purchase a good (Wilson & Kinghorn, 2016). In the case of intentionally purchasing a counterfeit good, the consumer had three different options (Li & Yi, 2017). The first would be to purchase the genuine product, the second would be to purchase a counterfeited version of the product, and the third would be to not purchased any version of the product at all. Li and Yi thought that a consumer may be more likely to purchased the genuine product in the future if they purchase a counterfeit one and enjoyed the experience with it, but there was no evidence to suggest that this might actually be the case. Since demand of counterfeits drove the supply of counterfeits, examining what cognitive factors may be going on when consumers were considering purchasing a counterfeit was important to consider.

      In an attempt to understand why a consumer may willingly purchase a counterfeit product, Kim, Kim, and Park (2012) completed a study analyzing the amount of cognitive resources that their participants had and what decision they made when given the opportunity to

purchase a counterfeit product or a genuine product. They predicted that their participants would be more willing to purchase counterfeit products when they had more cognitive resources available than when they had less cognitive resources available. If the consumer had to justify their purchase of a counterfeit good to themselves, they would need more cognitive resources to come up with a justification to purchase the counterfeit. Kim et al. completed a three-experiment study to test these ideas, and did find that when the participants had more cognitive resources, they were more likely to purchase a counterfeit product.

In the first experiment, Kim et al. (2012) assigned their participants to either a constrained cognitive resource condition, or an unconstrained cognitive resource condition. The participants were given two tasks, the first which was to cross out all instances of the letter "e" in a two-thirds page of text. Both the constrained and unconstrained conditions were given the same text, but the participants in the constrained condition were told not to cross out any "e's" under specific conditons. The participants were then given the second task, which presented them with a counterfeit purchase scenario. After reading the scenario, the participants were asked to indicate their intentions to purchase the counterfeit product. The participants were also asked to indicate their perceptions of the justification to purchase the counterfeit product. In the first experiment, Kim et al. found that the participants who had unconstrained cognitive resources had greater purchase intentions than the participants who had constrained cognitive resources. The participants in the unconstrained condition found the purchase of the counterfeit to be much more justifiable than the participants in the constrained condition.

In the second experiment, Kim et al. (2012) changed a couple of things in their procedure. They changed the unconstrained cognitive resources condition's task to a completing the experiment before a one-hour long midterm exam, and the constrained resources condition to

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after the one-hour long midterm exam. The experimenters also added two more conditions, one in which the participants were required to justify their decision to purchase the counterfeit or not to an experimenter, and one in which the participants were not required to justify their decision. Kim et al. again found that the participants who were in the unconstrained resource condition reported higher purchase intentions for the counterfeit than the participants who were in the constrained resource condition. They also found that the participants who were in the high accountability condition were generally less likely to purchase the counterfeit, regardless of the amount of cognitive resources that they had, than those who were in the low accountability condition, and in the unconstrained resource condition. Lastly, in their third experiment, Kim et al., again changed a few things, the first by changing the counterfeit product to be a high-tech video game, and giving the video-game the exact price of $45 for the genuine, and $15 for the counterfeit. They also changed the task for the cognitive resources again, where the participants in the constrained condition were asked to rehearse and memorize an eight-digit number while reading the counterfeit scenario, and the participants in the unconstrained condition were asked to rehearse and memorize a two-digit number while they were reading the counterfeit scenario. Again, they did find that the higher the amount of cognitive resources the participant had was positively related to how likely they were to purchase the counterfeit good. Kim et al. concluded by suggesting that the justification process of purchasing a counterfeit good required a considerable amount of cognitive resources.

Consumer's View of Counterfeit Morality. Consumers have been found to be less likely purchase counterfeit goods when they knew that doing so was morally wrong (Cordell, Wongtada, & Kieschnick, 1996; Penz & Stöttinger, 2005; Tan, 2002). Some research had found that consumers tended to believe that purchasing counterfeits and engaging in counterfeiting was

unethical (Commuri, 2009; Gino, Norton and Ariely, 2010; Zaichkowsky, 2006), but that they still chose to purchase counterfeit goods anyways, sometimes for social signaling, and other times for affordability (Han, Nunes, & Drèze, 2010; Wilcox, Kim, & Sen, 2009).

In Kim et al.'s (2012) third study, they asked their participants to rate 26 different unethical behaviors on a scale of "strongly believe that it is wrong," to "strongly believe that it is not wrong". They found that the moral beliefs that the participants stated that they had were negatively related to how likely they were to purchase a counterfeit product. They also suggested that if the participant held weak ethical beliefs, then they would be more willing and more likely to purchase a counterfeit product even when they had less cognitive resources to justify the purchase to themselves.

Chen, Teng, and Liao (2018) examined moral reasoning's influence on customers purchasing counterfeits. Chen et al. conducted their study in China, as they noted that China accounted for about 28% of all global consumption, and it was perceived as one of the main producers in the world for counterfeit goods. They developed a questionnaire and collected data via Qualtrics. They found that the consumer that was most likely to purchase a counterfeit product was well-educated young female Chinese consumers, and they were most likely to purchase luxury counterfeit products. They suggested that although younger people may not have as much money, they still desired to purchase luxury brands. Chen et al. found that the moral recognition that counterfeiting was illegal did not have a significant direct effect on the consumer's intent to purchase counterfeit goods. They argued that consumers were likely to justify their behavior to themselves to avoid any self-condemnation.

Amar, Ariely, Carmon and Yang (2018) were interested in examining how and why counterfeiting could hurt genuine products, and if this could change how effectively consumers

use the products. They hypothesized that counterfeiting could create moral disgust which would degrade the product in the consumer's eyes and might change the perception of the genuine products that resemble them. Amar et al. pointed out that moral disgust and physical disgust evoked very similar responses. Across five different experiments, they found that the participants who were told that one of the items was counterfeit did not perform as well on several different tasks when compared to the participants who were not told specifically that one of the items was counterfeit. Several different types of products were examined to determine if the effects were product specific, as well as attempting to determine if this effect had to do with the immorality of counterfeiting. Amar et al. did end up concluding that the effect did have to do with the immorality of counterfeiting, and the counterfeit items were infecting the genuine items with moral disgust.

Amar et al. (2018) completed five different experiments to investigate their hypotheses that exposure to counterfeits could create moral disgust, that perceived counterfeiting could hurt the product's efficacy, and that moral disgust that was evoked by perceived counterfeiting. In the first study, the participants were given two different tasks. The first task was a word completion task that they told the participants was supposed to measure verbal ability, and the second task was to balance a pen on their head and to keep it from falling off as long as they could. There were two different conditions that participants were randomly assigned to, the control condition, in which the participants were told nothing about the pen they received and the counterfeit condition, in which the participants were told that the pen that they received was a counterfeit. The same pen was used for both conditions. The participants were told to try out the pen and to use it for the word fill-in task, which had words that could either be filled in to suggest disgust (e.g. stink and revolting) or not (e.g. sting and revolving).

The participants were told that they could disinfect the pen before they tried to balance the pen on their head (Amar et al., 2018). There was a bottle of disinfectant liquid and a bottle of facial tissues that they could use in the experimentation room. The experimenters recorded if the participants cleaned the pen, how many tissues were used, how many pumps of the liquid were used, and how many seconds the participants spent cleaning the pen. The researchers also measured how long the pen remained on the participant's head. The participants who were in the counterfeiting condition wrote down more disgust-related words than the participants who were in the control condition. The participants in the counterfeit condition also used more tissues than the participants in the control condition, spent significantly more time cleaning the pen, and kept the pen on their head for a shorter duration than the participants in the control condition. They thought that the results from this first study suggested that counterfeiting could give rise to moral disgust.

In the second study Amar et al. (2018) wanted to test whether perceived counterfeiting would mediate a detrimental effect on product efficacy. In the second study, instead of a pen, they used a computer mouse. The participants were again assigned to two different conditions, one that was a control condition, and the other that was told that the computer mouse was a counterfeit. The participants then played a game of virtual table tennis, that required the use of the mouse to hit the ball. The experimenters hypothesized that the participants in the counterfeit condition would be more hesitant to have physical contact with the mouse and would be more likely to commit an error quicker than the participants in the control condition. The game ended when the participants missed hitting the ball. The experimenters tracked how long the participants were able to go without missing the ball. The shorter the amount of time that the participants were able to play, the worse performance they had. The participants then responded

to a questionnaire asking about moral disgust. They rated how much they found the mouse morally repulsive and ethically vile. They found that the participants in the counterfeit condition performed worse on the video game task, and they also expressed more moral disgust towards the mouse than the participants in the control task.

After the completion of the second study, Amar et al. (2018) then hypothesized that the counterfeit product may infect the genuine item because the two items share fundamental properties. They then completed a third study that was similar to the first study, with a pen as the object again. The participants in the counterfeit condition were given two pens. The first they were told was a counterfeit, and the second one they were told was genuine. The pens were exactly the same, and the participants completed a writing task with the genuine pen. The participants were asked to copy a paragraph of text and they were asked to write the paragraph as neatly as they could between two horizontal lines, and to not touch the lines or cross the lines if possible. The participants were then asked three items that were common but mild moral violations, to assess their attitudes towards these mild violations. Amar et al. found that the participants who were in the counterfeit condition made more errors on the paragraph copying, than the participants in the control condition. Amar et al. suggested that this meant that the participants who encountered the counterfeit item, let the counterfeit infect the genuine item due to their similarities. They also found that the participants who had more stringent moral attitudes in the counterfeit condition, also had more mistakes on the paragraph copying with the genuine pen than the participants who did not have as stringent moral attitudes.

Consumer's Motivation to Purchase Counterfeits. Both Phillips (2007) and Lewis (2009) suggested that one of the motivating factors for consumers to purchase counterfeits was that it was perceived as a "Robin Hood" type of crime. Consumers may resent big businesses

who charged high prices for luxury goods and the consumers were unsympathetic to the victimization of these businesses by counterfeiters (Lewis, 2009). Consumers may not care as much about intellectual property laws as businesses do, and they may realize that a product they are about to purchase was counterfeit, and think that the counterfeit was just as good as the real one (Chaudhry et al., 2005; Tom, Garibaldi, Zeng , & Pilcher, 1998; Nia & Zachkowsky, 2000). Some consumers may believe that counterfeits are fun to own, worth the value, or they may purchase them because they cost less than the genuine items. Lewis (2009) suggested that it was quite possible that the consumers who were purchasing counterfeit products may be ignorant of the overarching effects on the economy, and the possible injuries to themselves that counterfeits may cause.

Counterfeiting may also be fueled by consumers who want products that they cannot afford the genuine versions of, leading them to purchase the counterfeit versions of the products (Schornstein, 2013). Phau, Sequeria, and Dix (2009) suggested that the demand for status defining products was driving some of the demand for counterfeit goods. However, this does not explain why some consumers who were able to afford the genuine branded product still may opt to purchase the counterfeit version (Eisend & Schuchert-Güler, 2006). If a product's demand outweighs the supply, consumers may turn to counterfeits to fulfill their desires (Lewis, 2009). Lewis pointed out that in some cases, consumers may purchase counterfeit medication with the intent to misuse it.

Different cultures and countries of origin may also play a role in how willing a consumer was to purchase counterfeit products, as well as influence their motivations to purchase counterfeit products (Chaudhry et al., 2005). Penz et al. (2009) thought that age, social economic status, and the amount of education the consumer had, all may play a role in if a consumer was

more likely to purchase a counterfeit. Penz et al. completed a study examining the voluntary purchase of counterfeit products in four different countries. They reported several different reasons why consumers may be willing to purchase counterfeit products. If the prices of the counterfeit was perceived to be more positive than the genuine item, the consumer would be more likely to purchase a counterfeit. In some countries, consumers may be embarrassed to be caught with a counterfeit or using a counterfeit item, and this may help to prevent them from purchasing counterfeits. They found that the consumers they surveyed who knew about negative impacts of counterfeits were less likely to purchase counterfeits than the consumers who did not know the impacts.

Marinković and Dunković (2016) pointed out that the higher that a brand was valued by consumers, the more likely the consumer would be to purchase a counterfeit version of the brand. They noted that part of this had to do with a need for short-term satisfaction that was too strong for the consumers to be able to stop themselves from purchasing a counterfeit version. They suggested that this need for short-term satisfaction would influence the consumer to overlook any negative effects that may occur from purchasing a counterfeit, including the potential harm that may come to them. They suggested that because of the potential harms that may come to consumers, that it was problematic that the public perceived that counterfeiting was a crime that really only affected the owner of the trademark.

Li (2013) suggested that another factor that may motivate consumers to purchase counterfeit goods was the overall rising cost of genuine goods. Li suggested that one of the ways to help reduce the amount of consumers complying and purchasing counterfeit products was to create awareness of the negative impacts of counterfeiting. Li emphasized that it was important for the global supply chain to collaborate in order to slow the spread of counterfeit goods. Li

noted that there would likely be new challenges to overcome, such as consumers possibly having less privacy, as security measures for genuine products increased.

Marcketti and Shelley (2009) pointed out that there were very few American consumers who appreciated the significance of counterfeiting, the scope of counterfeiting, or the consequences of counterfeiting. The researchers noted that in their study they wanted to examine what the relationship between consumer concern, their knowledge, and their attitude was, with the willingness to pay more for non-counterfeit goods. Marcketti and Shelley completed a survey where the majority of the participants were undergraduate fashion and apparel students at a university. The participants were asked if they had ever purchased counterfeit products, and were provided a space in which to write any comments or questions that they had about counterfeit goods. Marcketti and Shelley found that the more knowledge the participants had about fashion industry issues, the more willing they were to pay for the genuine items. They also found that the more concerns that the participants had about counterfeit fashion items, the more likely they were to be willing to spend more money to purchase the genuine item. Marcketti and Shelley suggested that based on their findings, educating consumers about the negative consequences of counterfeiting may influence the buyer's intentions to purchase genuine goods.

Phau et al. (2009) were curious if personality factors played a role in attitudes towards counterfeit goods, and consumers intent to purchase counterfeit goods. The personality factors they examined were status consumption, materialism, and integrity. In their study, the researchers ended up not finding that any of these personality traits were predictive of if a consumer would purchase counterfeit luxury products. They used a commonly counterfeited watch brand of Tag Heuer as the counterfeit stimulus. The participants were told about both the genuine and the counterfeit watches and asked to rate their likelihood to purchase each watch.

They were asked to rate the product performance and the useful life in years that they predicted each of the watches would have. The survey asked the participants if they had ever purchased a counterfeit product before, and they were asked their attitudes of the lawfulness of purchasing counterfeits, as well as their attitudes towards the legality of purchasing counterfeits. The last section of the survey assessed the participant's integrity, status consumption, and materialism. Phau et al. found that neither the participants attitude towards the lawfulness of purchasing a counterfeit, nor the legality of purchasing counterfeits, were predictive of the consumer's willingness to purchase counterfeit goods. Phau et al. suggested that this might mean that counterfeiting and purchasing counterfeits were not seen as serious as other types of crime. The participants that highly valued honesty, politeness and responsibility tended to have negative attitudes towards counterfeits. Phau et al. concluded by emphasizing that it was important to continue to do research on the purchasers of counterfeits, as they are part of why counterfeiting continues to happen.

Consumer's Role in Counterfeiting as Accomplices. Consumers play a critical role in the counterfeiting business, as they purchase counterfeits, so they are willing accomplices (Cordell, et al., 1996). If consumers did not purchase any counterfeit products, then counterfeiting would not be a problem at all. One of the reasons why counterfeiting was spreading was due to the demand for counterfeit goods (Roberts, 1985; Chakraborty, Allred, & Bristol, 1996). As long as there was a demand for counterfeit goods, then counterfeiters would be sure to have a supply to make money off of these willing consumers (Bian & Moutinho, 2011). MacDonald and Roberts (1994) pointed out that counterfeiters were good marketers, as they had found a demand, and they had found a way to fulfill that demand. In a lot of cases, the point of counterfeits was not to deceive the consumer into purchasing the counterfeit product, but to

satisfy their wants with a counterfeit good (Arellano, 1994). Research by Bian and Veloutsou (2005) found that approximately one third of consumers would purchase counterfeit goods knowingly, and that 29% of consumers did not see anything wrong with the practice of counterfeiting if it did not put the buyer at risk.

Bloch et al. (1998) wanted to answer what proportion of consumers would choose to purchase a counterfeit if they were given the opportunity, and how the perceptions of counterfeit goods differed from the perceptions of the genuine items. They investigated if there were any demographic or personal characteristics that differed between people who chose to purchase a counterfeit good and those who did not. They also examined what purchase criteria were useful to predict a consumers' willingness to purchase a counterfeit product over the genuine item. Thirty-seven point five percent of their participants chose to purchase the counterfeit shirt, which was more than the amount of participants who opted to purchase the unbranded shirt that had the same price as the counterfeit version.

Bloch et al. (1998) completed their study in both a shopping mall and a flea market environment, in hopes of getting a variety of participants. The participant was presented with three different cotton knit shirts, all of which were the same color, and presented in a random order. One of the shirts was a well-known designer brand with a very distinctive logo on the shirt. The shirt was stated to cost $45 dollars. They had a second, identical shirt, that was identified as a counterfeit version of the genuine item, with a price tag of $18 dollars. The third shirt was unbranded, and said that it was a retailer brand, and was priced at $18 dollars. The researchers asked the participants which one of the three shirts they would be most likely to purchase. The participants were then asked to complete a survey following their choice, which asked them to evaluate each product, what purchase criteria they had for apparel, and about their

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personal individual characteristics. They found that 29% of their participants chose the designer shirt, 37.5% chose the counterfeit shirt, and 33.5% chose the non-logo shirt. The participants were noted to have little hesitancy as to which one of the three shirts that they would choose to purchase. Bloch et al. stated that they had informed their participants of the illegality of counterfeiting, prior to the experiment. The researchers indicated that they used a genuine shirt for the counterfeit version, so it would be difficult to determine if the participants noticed that there was not much of a quality difference between the genuine branded shirt and the counterfeit branded shirt. Bloch et al. also suggested that the amount of consumers who would willingly purchase a counterfeit version of the product may change across different categories of products as well.

Tom et al. (1998) completed a three-part survey study in which they hoped to identify what types of consumers were prone to purchase counterfeits, and what types of products they purchased. The participants were recruited from two different locations, a mall and a flea market. Tom et al. thought that the participants who were recruited from the mall were less likely to have purchased counterfeit products than the participants who were recruited from the flea market. At the time of their study, flea markets were a common place for counterfeits to be sold. In their first survey, they found that 32% of their participants chose to purchase a counterfeit product, and that the preference for the counterfeit product also depended upon what type of product the participant chose. The participants were asked about their satisfaction with counterfeit products, and those who chose to purchase a counterfeit were more positive towards counterfeits than the participants who did not choose to purchase the counterfeit. The participants who preferred the counterfeit products tended to be younger, less educated, and had less money than the participants who preferred the genuine product. Across their three surveys, they found that 38%

of their participants had purchased one or more counterfeit products, knowing full well that they were counterfeits.

In the first survey, Tom et al. (1998) measured consumer attitudes towards counterfeiting. They found that the consumers who had never knowingly purchased counterfeit goods had attitudes that were less supportive of counterfeiting than the consumers who had stated that they had knowingly purchased a counterfeit product. In the second part of the study, the participants were presented with an opportunity to purchase a counterfeit good in a simulated shopping experience. The participants were offered four different types of items, a CD, a piece software, a t-shirt, and a purse, each which had a genuine and a counterfeit version. Each participant was given the choice of categories, and the choice between the genuine or the counterfeit in that category of product. The counterfeit and genuine products were labeled and priced so that the counterfeit versions cost less, and the legitimate versions cost more.

Participants were asked to report the importance of five different product attributes (Tom et al., 1998). The five attributes were: the price for the product, the functionality of the product, the durability and/or quality of the product, the style and/or appearance of the product, and the brand and/or image of the product. They were asked to rate their satisfaction with each of these attributes for both the counterfeit version and the legitimate version of the product. Of their participants, 32% chose to purchase the counterfeit product, and the other 68% chose to purchase the genuine product. The counterfeit t-shirt was picked by 42% of the participants in that category, the counterfeit CD was chosen by 31% of the participants in that category, the counterfeit purse was chosen by 30% of the participants in that category, and the counterfeit software was chosen by 17% of the participants in that category. The majority of the participants stated that they were more satisfied with the price on the counterfeit product than they were on

the genuine product. In general, the researchers found that their participants found the legitimate product to be superior to the counterfeit. They suggested that some of the shoppers who preferred the counterfeit product may see themselves as sly shoppers, and that the other participants may have seen themselves as economically constrained. Tom et al. suggested that to prevent these particular shoppers from purchasing counterfeits, different anti-counterfeiting strategies may need to be used, such as convincing them that not purchasing counterfeits would be in their self-interest.

In the next part of their study, Tom et al. (1998) examined if the consumer's satisfaction with counterfeit goods was related to their tendency to purchase counterfeits. The participants completed a survey, which asked them how many times they had knowingly purchased counterfeit products, how satisfied they were with the counterfeit items, and how likely they were to purchase counterfeit items in the future. Tom et al. found that 38% of their participants had purchased one or more counterfeit products, knowing that they were counterfeits. They again found variation based on the category of products. Forty-nine percent of the participants who had knowingly purchased a counterfeit had purchased counterfeit designer clothing, 35% had purchased counterfeit perfumes, 30% had purchased counterfeit tape recordings, 29% had purchased counterfeit watches, 26% had purchased counterfeit software, 25% had purchased counterfeit videos, 21% had purchased counterfeit purses, and 20% had purchased counterfeit CDs.

Forty-six percent of the participants at the flea market had knowingly purchased a counterfeit product, as opposed to the 31% of the participants from the mall (Tom et al., 1998). The consumers who were from the flea market had satisfaction with counterfeit goods as a significant predictor for the intent to purchase counterfeit goods in the future. For the consumers

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from the mall, satisfaction with counterfeit CDs, perfumes, and purses was a significant predictor

for the intent to purchase counterfeits in the future. Tom et al. concluded that a large portion of

consumers were accomplices to counterfeiting by purchasing counterfeit goods. They also

suggested that anti-counterfeiting strategies may need to be evaluated on a product-by-product

basis, to help ensure that they were effective for the product type.

Consumer's Role in Anti-Counterfeiting Technologies. While it was important that

companies put both overt and covert indicators on their products, if they wanted the consumers

to examine the products for anti-counterfeiting indicators, the consumers need to know what to

look for (Shah et al., 2010). They also need to be aware that there are counterfeits of every type

of product, and what they should do if they thought that they purchased a counterfeit product.

Research by Charlebois, Schwab, Henn, and Huck (2016) suggested that consumers were willing

to authenticate food and beverage products in the store, and Soon and Manning (2019) indicated

that implanting a system for consumers to verify the product's authenticity would allow them to

authenticate the product prior to purchasing it. It was possible that consumers might be interested

in using this type of system to authenticate all types of products.

Ting and Tsang (2013) with their WARDS system thought that it would be helpful to

have the consumer involved in the authentication process. They interviewed some experts and

suggested that involving the consumer in the authentication process may help to reduce the

demand on genuine companies to verify the product. Ting and Tsang also suggested that using a

two-step authentication system would provide more security and ease of use for the consumers

than any single anti-counterfeiting technology alone. Lewis (2009) pointed out that consumers

did not have many ways to verify if a product was genuine, and there may not be many

differences on the product package between the genuine and the counterfeit. Chaudhry and

Stumpf (2013) pointed out that as the end user, if the consumer noticed something was amiss, they then could follow some steps to validate the product and report the product if they suspected it to be counterfeit.

A tool that could be used to allow a consumer to verify a product via their smartphone would be a QR code (Mackey and Nayyar, 2017). QR codes could also allow the consumer to see where the product had been in the supply chain, on top of verifying the authenticity. It would still be important to make sure that the consumer was well informed about counterfeits and what they needed to do to protect themselves from them. Chaudhry and Zimmerman (2009, 2012) indicated that it was important not to rely entirely upon the consumer to identify counterfeits, as the counterfeiters themselves were focused on imitating the exact product. Deisingh (2004) noted that there were more consumers who were becoming aware of potential counterfeit medication, and having a tool to allow consumers to verify the medication as genuine may help to relieve some of their worries.

Falkowski, Olszewska, and Ulatowska (2015) investigated if look-alike brands of products that were in the same category as the original product would elicit a false memory of the original product in consumers. They wondered if this distortion would only occur if the consumers were looking at pictorial images, or if it would carry over to similar sounding brand names as well. If it was the case that the look-alike brands were easily confused with the original brands, then the look-alike brands were creating a dishonest marketing competition with the original brands. The research team examined four different types of products: energy drinks, stain removers, frozen vegetables, and universal food seasonings. They found that the look-alike brands were always less memorable than the original brands, and their participants were more likely to wrongly recognize a look-alike product than the original product. Falkowski et al. also

found that the modality in which the brands were presented did not change the confusability of the brands, even if the brand was presented both auditorily and visually. They concluding by stating that look-alike branded products could be contributing to dishonest marketing competition, as they easily activated the original brands, but the original brands did not activate the look-alike products.

Wimmer and Yoon (2017) completed a study examining the problem of counterfeit goods online. They pointed out that shopping for goods online put the burden on the consumer to determine if something was a counterfeit, making the decision-making procedure longer and more complex. Bate and Hess (2010) suggested that when an online retailer concealed their physical address, it was a counterfeit retailer about 50% of the time. Wimmer and Yoon (2017) prototyped an automatic counterfeit scoring system that identified potential counterfeit goods based on the reviews. Negative sentiments in the reviews lead to higher counterfeit scores. They hypothesized that this score would affect the consumer's trust of the product, their perceived risk of the product, and their attitude towards purchasing the product. The scoring system's interface included a visual display that would indicate to the consumer how likely it was a that the product was counterfeit. Wimmer and Yoon concluded by suggesting a visual counterfeit indicator, such as the one they designed, may help to assist consumers trying to determine if a product was a counterfeit or not on websites such as Amazon™ and Ebay™.

Wilson and Fenoff (2014) suggested that the majority of research investigating the purchase of counterfeits on the internet had been completed on auction websites, and that not much research had been completed on business-to-consumer websites. The authors were particularly concerned because many of the products that were being sold on these websites had the potential to harm the consumer and suggested that consumers may need help to identify

websites that are selling counterfeits. These types of indicators could help to prevent deceptive counterfeit purchases in the virtual environment. Wilson and Fenoff were particularly interested in if counterfeiters were using an effective website design, or if they were using more basic features to quickly get their products out there for consumers to purchase. They noted that this could also change based on if the counterfeiters were attempting to deceive the consumers or not. In their work, they found that authorized websites had more features, with an average of 19 different features, whereas counterfeit websites had less features, with an average of 16 features.

Wilson and Fenoff (2014) completed a study that examined authorized seller websites and counterfeit seller websites for both an apparel brand and an audio company. They examined six different aspects for each of the websites. These aspects were the age of the website, the country of origin of the website, security features for the genuineness of the products on the website, the marketing of the website, the functionality of the website, and the interactivity and navigation of the website. They further broke down some of these categories to get a better understanding of the counterfeit and genuine websites' differences. They examined a total of 38 different features on the websites. They found that the counterfeit websites for both types of products were much more likely to accept wire payments. Counterfeit websites were more likely to have non-U.S. addresses listed, use generic e-mail domains (such as @gmail.com), and offer request forms online. Authentic websites were much more likely to have a U.S. mailing address and phone number, as well as having a company specific e-mail and having a store locator on the website. For the audio websites, the counterfeit sites listed the date the website was last updated, while the authentic sites did not. The counterfeit websites, in general, were more likely to have multilingual capabilities, and counterfeit websites were more likely to have home webpages that

required the user to scroll down. The authentic websites were more likely to have video and animated effects.

For the website's marketing, having social media links on the website, and having well written text and content were more likely to indicate that the website was an authentic website (Wilson & Fenoff, 2014). The authorized audio websites were more likely to offer real time customer service, and counterfeit websites were more likely to list non-U.S. phone numbers. Specifically, for the audio websites, signs of authenticity included: having information on company personnel and officers, displaying brand logos and general images, having an "about us" page on the website, and having an option to join an e-mail list. For website security, the Better Business Bureau (BBB) stamp was only on one third of authorized audio websites. The authorized audio websites were also more likely to have security and/or privacy policies. For the counterfeit apparel websites, the sites were more likely to offer huge discounts that were beyond typical sale prices and were more likely to market themselves as outlet stores. Counterfeit apparel websites were more likely to have a comment about the product's authenticity, and authorized apparel websites were more likely to have an e-mail address listed.

Regarding the country of origin, nearly all of the authentic websites originated from the U.S. (Wilson & Fenoff, 2014). Not a single authorized website originated from China, whereas about half of the counterfeit websites originated in China. The other roughly half of the counterfeit websites originated from the United States. For the websites age, the authentic websites were significantly older than the counterfeit websites, for both the apparel and the audio companies. The counterfeit websites had been around for an average of about a year and a half. Wilson and Fenoff concluded by suggesting that if the counterfeiters were intentionally trying to

sell deceptive counterfeits to consumers, they may be less likely to have more features on the website than if they were not trying to engage in deceptive counterfeiting.

Yuetao (2016) completed a study where they had two groups of participants examine two different medication packages. One of the medication packages had a holographic sticker on it, to suggest that it was an authentic product, and the other package did not have a holographic sticker on it. The researchers then asked the participants to indicate how likely they were to purchase the medication on a scale of one to seven. They found that the participants who had the medication box with the holographic sticker on it were more likely to purchase the medication than the participants who did not have the holographic sticker on the medication box.

Previous research by Torrico et al. (2018) used eye tracking with their participants who were examining product packaging and labels. The participants were asked to look at a color changing label that would go on a baby food bottle. Both a virtual label and a physical label were used in the experiment. They noted that traditional research on product packaging and labels had relied on self-report methods. They found that the color transitions did significantly affect the fixations of the consumers and that the consumers were willing to purchase a food item with color changing labels. This research showed that good information can be found using eye tracking on product packaging and justifies the use of eye tracking on product packaging for the proposed research.

Counterfeit products can cause harm at many levels and some of the serious harms can affect the consumers themselves. The global nature of counterfeiting coupled with practical limitations in supply side countermeasures means the burden for protecting oneself from counterfeit products will fall to the consumer. Evidence suggests consumers are not fully aware that the products that they are purchasing might be counterfeit or that they have been

counterfeited in the past. Further, it is important to understand what consumers might be looking for when they are examining product packages. One mechanism to increase consumer awareness and promote consumer driven detection of counterfeit products is warning labels. The present study seeks to gain insight into the efficacy of warning labels in promoting consumer inspection of product packaging for anti-counterfeit indicators.

Present Study

Specifically, this research will address four groups of research questions pertaining to warning labels and anti-counterfeiting indicators. For the present study, I propose the following research questions.

Research question 1: Will consumers spend more time inspecting packages with warning labels?

Research question 2a: Will consumers pay more attention to anti-counterfeiting indicators when warning labels are present?

Research question 2b: Will time to first inspection of anti-counterfeiting indicators be shorter in the warning label condition?

Research question 2c: Will a higher percentage of total inspection time be devoted to indicators in the warning label condition?

Research question 3: Which overt anti-counterfeiting marks do consumers notice on product packages? This will be examined both through what the participant states they noticed, and which marks the participant fixated on the most in the eye tracking data.

Research question 4: How does the presence of warning labels and type of anti-counterfeiting indicators affect purchase decisions?

Methods

Participants. Sixty-four participants were recruited using an online signup system. Participants earned course credit. During the summer, participants were recruited through word of mouth, and were paid $10 upon their successful completion of the study. An a priori power analysis was completed in G*power, with a moderate effect size of $d = 0.5$, a $p = 0.7$ correlation between the repeated measures, and found that the study required a total of 64 participants.

Design. This study used a 2 x 3 mixed design. The presence or absence of a counterfeit warning label was the between subjects factor. The order effect from having already seen packages with warning labels made a within subject design for this variable impractical. The second factor was the type of anti-counterfeiting indicator which consisted of a QR code, or a holographic tamper evident sticker, or no added indicator. Participants viewed thirteen unique packages, four with each type of indicator. There was one package that was considered the test trial package, and all participants saw this package first. The test trial package did not have an added indicator.

Independent variables: a) presence or absence of warning label (see Figure 1)

b) Which one of the indicators was on the product package.

Dependent variables: a) Rating of trust of the product package.

b) Rating of the participant's purchase intention of the product.

c) Self-report of things that they noticed about the product package.

d) Dwell time spent in areas of interest on the product package, extracted from the Pupil labs software.

e) Time to fixation of areas of interest on the product package.

Figure 1. Counterfeit alert warning label.

Materials. One group of participants saw packages with an anti-counterfeiting warning on each of the product packages (See Figure 1), and the second group saw the same packages without the anti-counterfeiting warning added. There were two different added overt anti-counterfeiting indicators that the participants will saw. Only one of these indicators was added to each package. These indicators were a QR code (See Figure 2), and a holographic tamper evident sticker (See Figure 3), informed from a survey study completed in the Fall of 2020.

Figure 2. QR code anti-counterfeiting indicator

Figure 3. Holographic anti-counterfeiting security tag

The participants saw a total of thirteen different pill form, over-the-counter pharmaceutical product packages. Specifically, these packages included an Aleve™ package, an Advil™ package, a Benadryl™ package, a Bayer™ package, a Tylenol™ extra strength package, a Pepto Bismol™ package, a Tums™ package, a NyQuil™ package, a DayQuil™

package, a Robitussin™ package, a Claritin™ package, a Zyrtec™ package, and a Mucinex™

package.

Figure 4a. Aleve™ package that was used in the experiment.
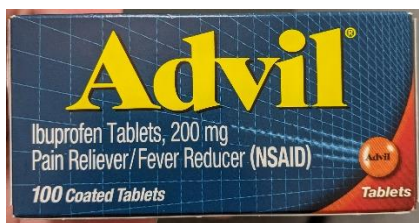
Figure 4b. Advil™ package that was used in the experiment.

Figure 4c. Benadryl™ package that was used in the experiment.

Figure 4d. Bayer™ package that was used in the experiment.

Figure 4e. Tylenol™ package that was used in the experiment.

Figure 4f. Pepto Bismol™ package that was used in the experiment.

Figure 4g. Tums™ package that was used in the experiment.

Figure 4h. NyQuil™ package that was used in the experiment.

Figure 4i. DayQuil™ package that was used in the experiment.

Figure 4j. Robitussin™ package that was used in the experiment.

Figure 4k. Claritin™ package that was used in the experiment.

Figure 4l. Zyrtec™ package that was used in the experiment.

Figure 4m. Mucinex™ package that was used in the experiment.

Apparatus. The Pupil Labs Core eye tacking glasses were used to collect the eye tracking data. These eye tracking glasses had binocular eye tracking with a sampling rate of 200 Hz. The eye tracker had a scene camera on the top part of the glasses against the participants forehead, and there are two more adjustable cameras, one for each eye. The two eye tracking cameras used infrared light, to track the participant's pupils. The software that was used to collect data and analyze the data was the associated Pupil Capture and Pupil Player version 3.0.7.

Procedure. The participants came to the lab and were given the informed consent form to read. The experimenter asked them if they had any questions about the informed consent, and if they did, those questions were answered. Then, the eye tracking glasses were put on the participant before beginning the recording. The eye tracking glasses were cleaned in between each participant to reduce the spread of diseases. The eye tracking glasses did not have glass in them, so participants would be able to continue to wear any corrective glasses that they would need, as long as the corrective lenses fit underneath the eye tracker. The eye tracker was used to examine where on each of the product packages the participants were spending most of their time inspecting.

The participants were deceived and told that some of the packages may be counterfeits, and that some of them may not be. They were told that they need to identify which of the packages were counterfeits and which of the packages were not. All of the packages were

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actually genuine, and there were no counterfeit products used in the experiment. This deception

was done in hopes of getting the participants more engaged with the task, and to help call their

attention to indicators that may be on the package. The participants had a total of two minutes to

look over each of the different product packages, but they were not required to examine the

package for that entire time if they did not wish to. As soon as the time was up or the participant

indicated that they were done looking over the product package, the experimenter gave the

participants a questionnaire on an iPad™ (See Appendix A). This questionnaire asked the

participant how much they trusted that the product was genuine on a scale of one to seven,

labeled from "strongly disagree" to "strongly agree", their purchase intention of the product, on a

scale of one to seven, labeled from "would not purchase", to "would purchase," if they thought

the product was genuine or counterfeit, and what sort of things they noticed on the product

package that made them rate the product this way. The Aleve™ package was always shown to

the participants first, as a tester package to expose the warning group participants to the warning

label in hopes of washing out any novelty effects of the warning. Thus, the Aleve™ package's

measurements were not included for the analysis. The procedure then repeated for each of the

different product packages until the participant had seen all 12 experimental product packages.

The order in which the packages were presented to each participant was randomized. The

participants in the no warning condition saw a total of thirteen different product packages, four

with the QR indicator, and four with the holographic indicator, four with no additional indicator,

and one test trial package. The participants in the warning condition saw the same thirteen

packages with the indicators, and a warning label added to each product package. The

participants then were thanked for their time and dismissed from the experiment.

For the data analysis, the Pupil Player software did not have any way of automatically tracking where the participants were looking on the package, so the data was manually gone through and marked when the participant was looking at the indicator or the warning label. A single frame was about 30 milliseconds. Due to this short timeframe, if the time spent examining the product was less than 100 milliseconds, it was not included in the analysis.

Results

Planned Analyses. Research question 1 will be tested with ANOVA comparing the total amount of dwell time spent looking at the package.

Research question 2a will be tested with ANOVA comparing the no warning labels group dwell times on the anti-counterfeiting indicators with the warning labels group dwell times on the anti-counterfeiting indicators.

Research question 2b will be tested with ANOVA comparing time to first inspection between the no warning labels group and the warning labels group.

Research question 2c will be tested with ANOVA comparing the dwell time on the anti-counterfeiting indicators between the no warning labels group and the warning labels group.

Research question 3 will be tested with two different ANOVAs comparing the two different anti-counterfeiting marks based on what the participants stated that they noticed about the product package, and how long they fixated on each of the anti-counterfeiting indicators in the eye tracking data.

Research question 4 will be tested with a t-test comparing the warning label group's purchase intention with the no warning label group's purchase intention.

Data. A total of 64 participants participated in the experiment, with a total of 25 men, 39 women. Three participant's data were thrown out due to their eye tracking data not being usable, leaving 36 women and 25 men. The average age of the participants was 22.3 years, and the range of ages was from 18-43.

The eye tracker records the participant's eye in both two dimensions and three dimensions. The reported difference between the two-dimensional tracking and the three-dimensional tracking was that the three-dimensional tracking accounted for slippage of the headset throughout the entirety of the recording. However, during the data analysis it was noticed that the three-dimensional tracking had difficulty tracking when the participant had very long eyelashes or was wearing a lot of makeup. If the two-dimensional tracking was better for these participants, it was used instead of the two-dimensional tracking. A total of 20 participants were analyzed using the two-dimensional tracking.

There was one outlier in terms of the total time spent on the product package. The first one was the Tums™ product package, which the participants spent an average of $M = 38.444$ seconds examining the product package. Three participants were also excluded from the analysis because they spent greater than two standard deviations in time examining the product packages, on average.

Statistical Analyses and Results. For the statistical analyses, JASP was used, with sums of squares Type III. Overall, the mean time that all the participants spent looking at the product packages was 45.891 seconds.

Research question one was examined using an ANOVA with the total time spent examining the package as the dependent variable, and if the warning label was present or absent, and if an indicator was present or absent for the independent variables. The presence of the

warning label was statistically significant on the total time the participants spent examining the product package, with $F = 6.530$, $p = 0.011$. The participants who saw the warning label spent $M = 47.718$ seconds examining each product package, and the participants who did not see the warning label spent $M = 42.959$ seconds examining each product package (see Figure 5). The indicator presence or absence was not statistically significant, with $F = 0.263$, $p = 0.608$. The interaction between the warning label presence or absence and the indicator presence or absence was also not statistically significant, with $F = 0.005$, and $p = 0.942$.
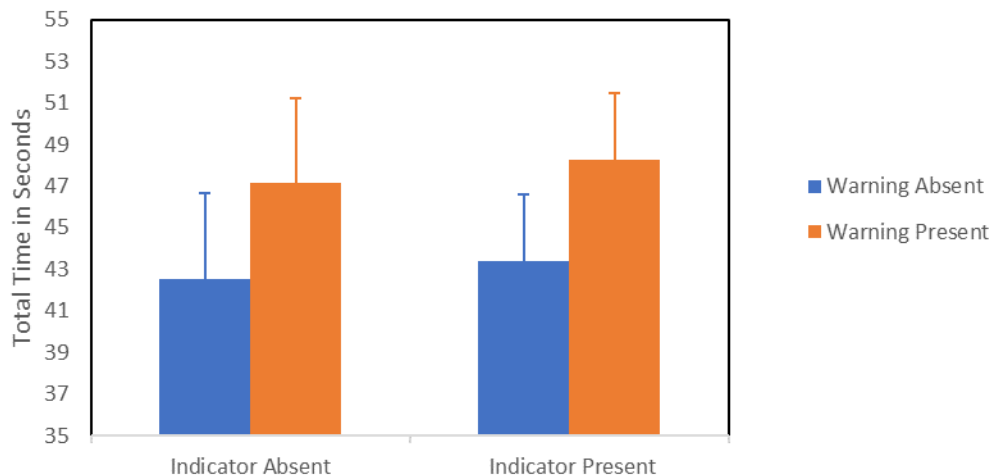
Figure 5. Influence of warning label presence or absence and indicator presence or absence of total time spent examining the product package.

Research question one was also examined by comparing the two types of indicators and the presence or absence of the warning label. The warning label was again statistically significant for influencing the amount of time that the participants spent examining the product package, with $F = 4.578$, $p = 0.033$. The mean or time spent examining the product with the warning label on the product package was $M = 48.263$, and the mean for the time spent examining the product without the warning label on the package was $M = 43.368$ (see Figure 6). The total time spent examining the product package did not change based on the type of indicator

(either the QR code or the holographic indicator), with $F = 0.044$, and $p = 0.834$. The average

total time that the participants spent examining the packages with the QR codes was $M = 46.055$,

and the average total time that the participants spent examining the packages that had the

holographic indicator on them was $M = 45.575$. The interaction between the warning label and

the indicator type was not statistically significant, with $F = 0.269$, and $p = 0.604$.
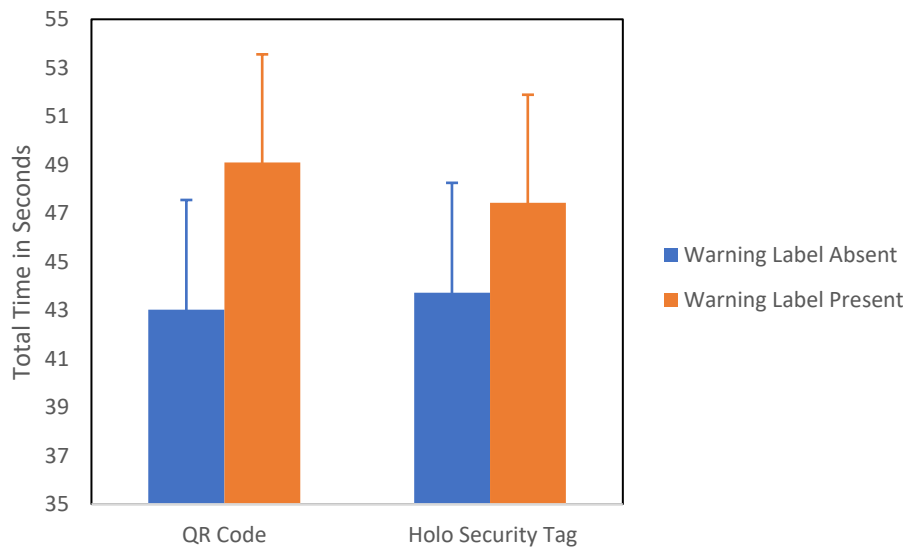
Figure 6. Influence of type of indicator and warning presence or absence on total time spent examining product package.

Research question 2a was examined through an ANOVA with the total time the

participant spent examining the indicator on the package as the dependent variable, and the

presence or absence of a warning label, and the type of indicators as the independent variables.

The presence or absence of the warning label was not statistically significant with $F = 1.633$, $p = 0.202$. The indicator type was not statistically significant, with $F = 1.161$, $p = 0.282$. The

interaction between the indicator and the warning label was also not statistically significant, with

$F = 0.119$, $p = 0.730$ (see Figure 7).
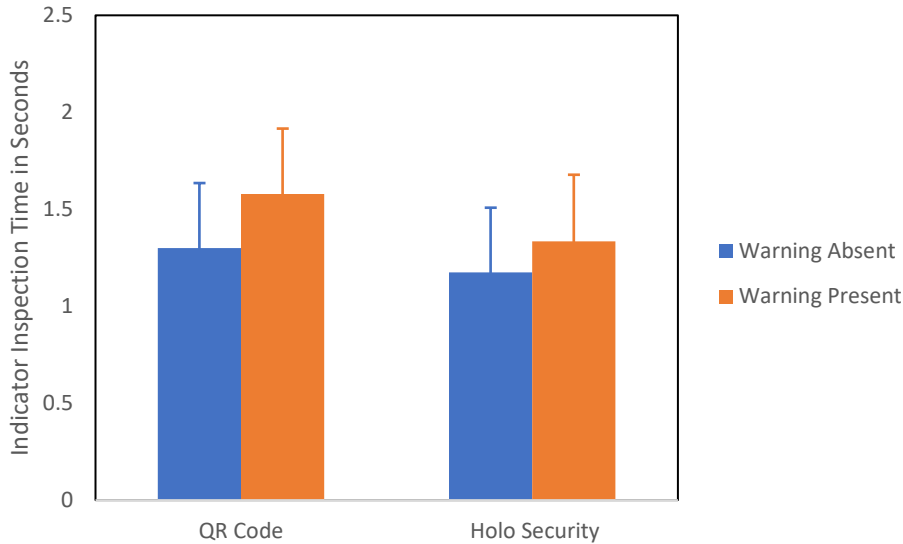
Figure 7. Influence of warning presence or absence and indicator type on total indicator inspection time.

Research question 2b was examined through an ANOVA where the time to first glance of the indicator was the dependent variable, and the presence or absence of the warning label and the type of indicator were the independent variables. The warning label presence or absence was statistically significant, with $F = 4.202$, $p = 0.041$. The mean for the warning absent condition was $M = 17.886$, and the mean for the warning present condition was $M = 21.879$ (see Figure 8). The type of indicator was not statistically significant, with $F = 1.300$, $p = 0.255$. The interaction between the presence or absence of the warning label and the type of indicator was not statistically significant with $F = 2.224$, $p = 0.137$. This question was also analyzed using the time to first glance in a proportion of the total time spent examining the product to help control for the differences in the amount of time spent examining the product. For the proportion, the warning label was not statistically significant, with $F = 0.408$, $p = 0.524$. The indicator type was not statistically significant with $F = 2.082$, $p = 0.150$. The interaction between the presence or absence of the warning label and the type of indicator was not statistically significant with $F =$

0.577, $p = 0.448$ (see Figure 9). The discrepancies in these two tests will be discussed in the

discussion section.
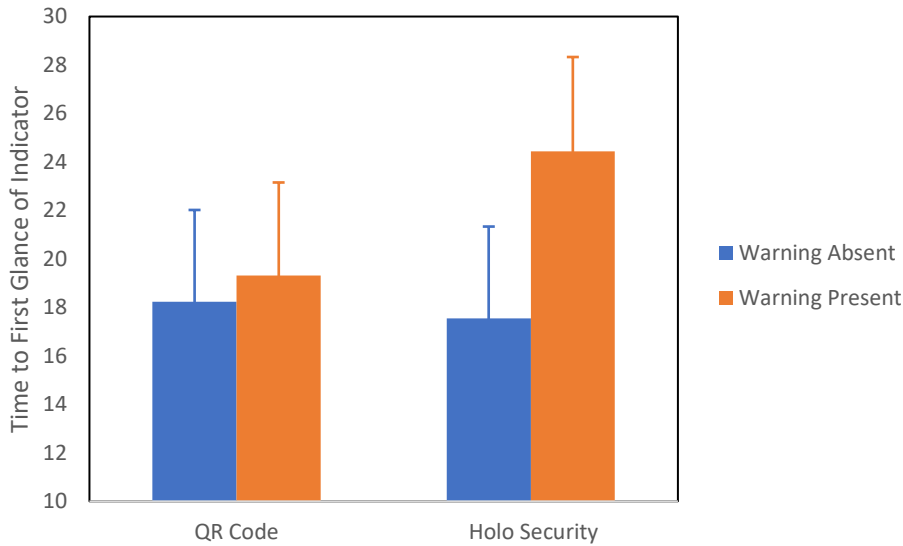
Figure 8. Influence of warning presence or absence and indicator type on time to first glance of
the added indicator.
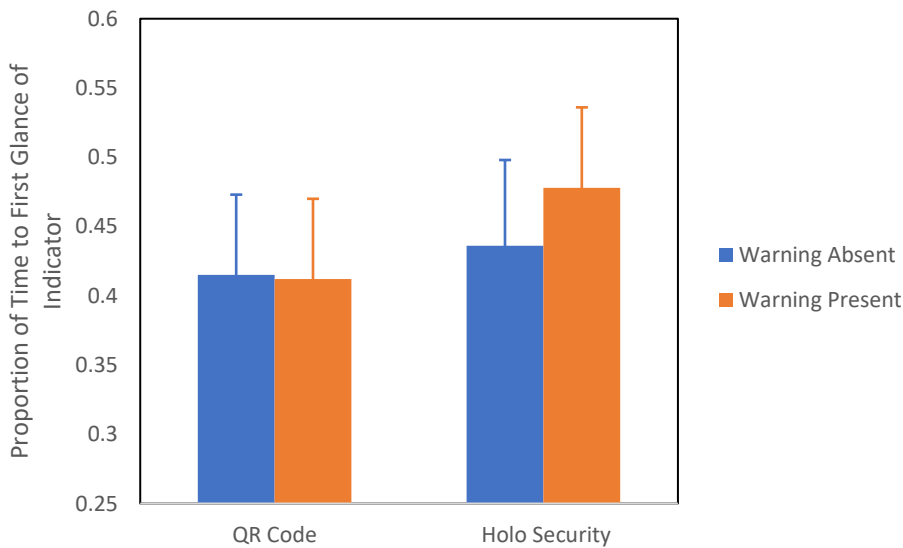
Figure 9. Influence of warning presence or absence and indicator type on the proportion of time
to the first glance of the indicator.

Research question 2c was examined through an ANOVA where the proportion of time

spent examining the indicator out of the total time spent examining the product was the

dependent variable, and the presence or absence of the warning label, and the type of indicator were the independent variables. The presence or absence of the warning label was not statistically significant, with $F = 0.124$, $p = 0.725$. The type of indicator was not statistically significant with $F = 0.379$, $p = 0.539$. The interaction between the presence or absence of the warning label, and the type of indicator was not statistically significant, with $F = 0.002$, $p = 0.964$ (see Figure 10). It is important to note that ANOVAs have difficulties with small proportions, and that at these levels, ANOVA may not be able to account for differences as well.
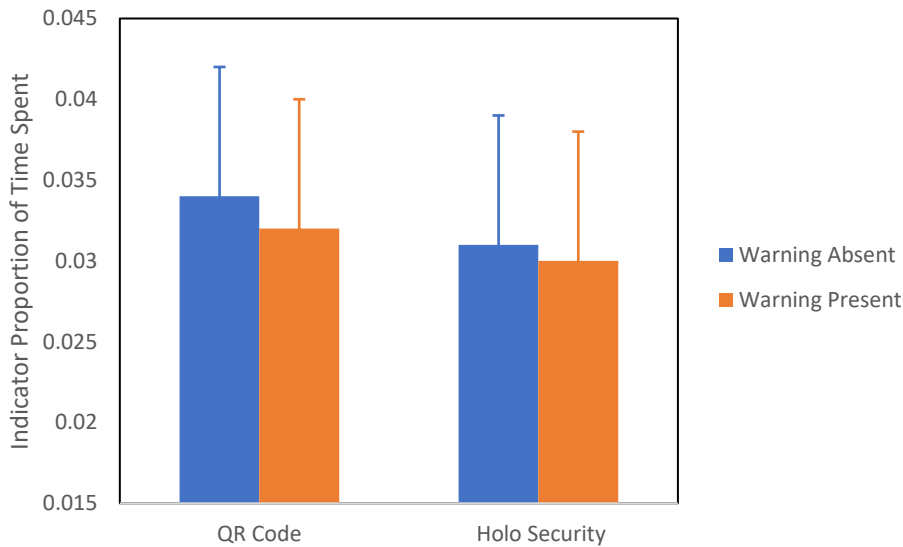
Figure 10. Influence of warning presence or absence and the type of indicator on the proportion of time spent examining the indicator.

Research question three was examined through an ANOVA where the dependent variable was the time spent examining the indicator, and the independent variable the indicator type. It was not statistically significant with, $F = 1.184$, and $p = 0.277$ (see Figure 11). Research question three was also examined by using the proportion of the total time spent examining the indicator on the product, outside of the total time spent examining the product to control for the differences in time spent on the product. This was also not statistically significant, $F = 0.377$, $p = 0.540$ (see Figure 12).

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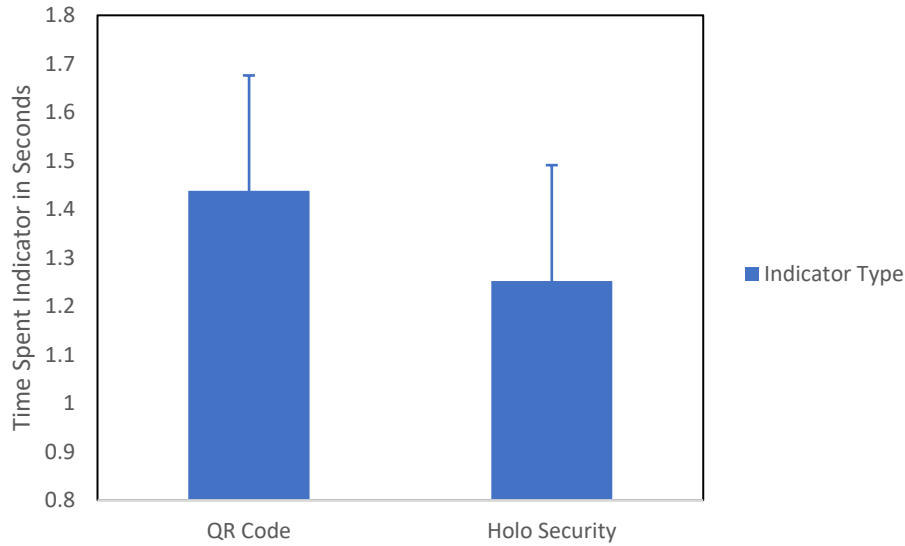
Figure 11. Influence of the type of indicator on the time spent examining the indicator.
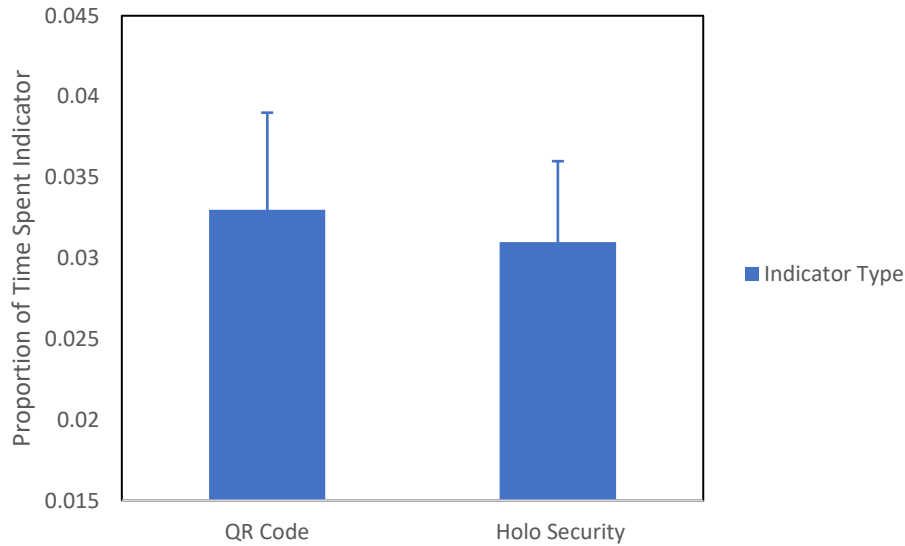
Figure 12. Influence of the type of indicator on the proportion of the time spent examining the indicator.

Research question four was examined through an ANOVA where the dependent variable was the purchase intention rating that the participant entered into the survey, and the independent variables were the presence or absence of the warning label, the type of indicator, and gender. Gender was added on to investigate any gender effects that may be present. The presence or

absence of the warning label was not statistically significant, with $F = 0.083$, $p = 0.773$. The indicator type was statistically significant with $F = 4.482$, $p = 0.035$. The mean purchase rating for the products with the QR code was $M = 4.037$, and the mean purchase rating for the products with the holographic indicator was $M = 4.440$ (see Figure 13). Gender was not statistically significant, with $F = 1.205$, $p = 0.273$. The interaction between the presence and absence of the warning label and the type of indicator was not statistically significant, with $F = 0.048$, $p = 0.828$. The interaction between warning label and gender, was not statistically significant, with $F = 0.038$, $p = 0.846$. The interaction between indicator type and gender was not statistically significant, with $F = 0.168$, $p = 0.682$. The interaction among warning label, indicator type, and gender was not statistically significant, with $F = 0.030$, $p = 0.862$.

Figure 13. Influence of the presence or absence of the warning label, the indicator type, and gender on the purchase ratings of the participants.

Several exploratory analyses were also conducted. For research question one, it was thought that the amount of time that was spent on the warning may be affecting how much time the participants spent examining the overall package. Thus, two ANOVAs were completed where the total time that the participants spent looking at the warning label was subtracted from

the total time that the participants spent examining the product package. The first one examined the warning label presence or absence with the indicator presence or absence on the total time the participant spent examining the product package. The warning label presence or absence was not statistically significant with $F = 2.845$, $p = 0.092$. The indicator presence or absence was not statistically significant, with $F = 0.423$, $p = 0.516$. The interaction was not statistically significant, with $F = 0.043$, $p = 0.836$ (see Figure 14). This correction was also completed for examining the time spent on the product with the presence or absence of the warning label, and the indicator type. The warning label was not statistically significant, with $F = 2.363$, $p = 0.125$. The indicator type was not statistically significant with $F = 0.077$, $p = 0.781$. The interaction was not statistically significant, with $F = 0.346$, $p = 0.557$ (see Figure 15). The differences between these two ANOVAs, and the two ANOVAs originally completed for research question one will be addressed in the discussion section.
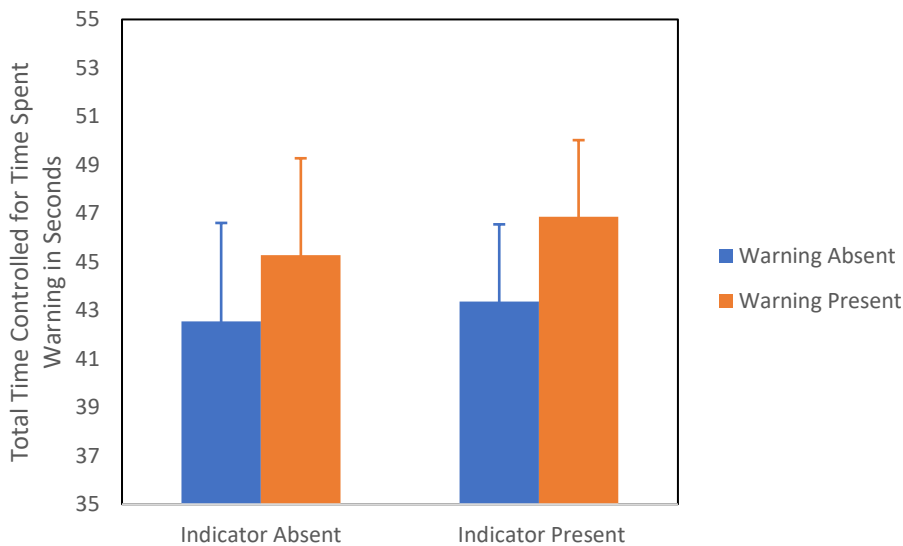
Figure 14. Influence of the warning presence or absence, and the presence or absence of an added indicator on the total time when controlled for the amount of time spent examining the warning.
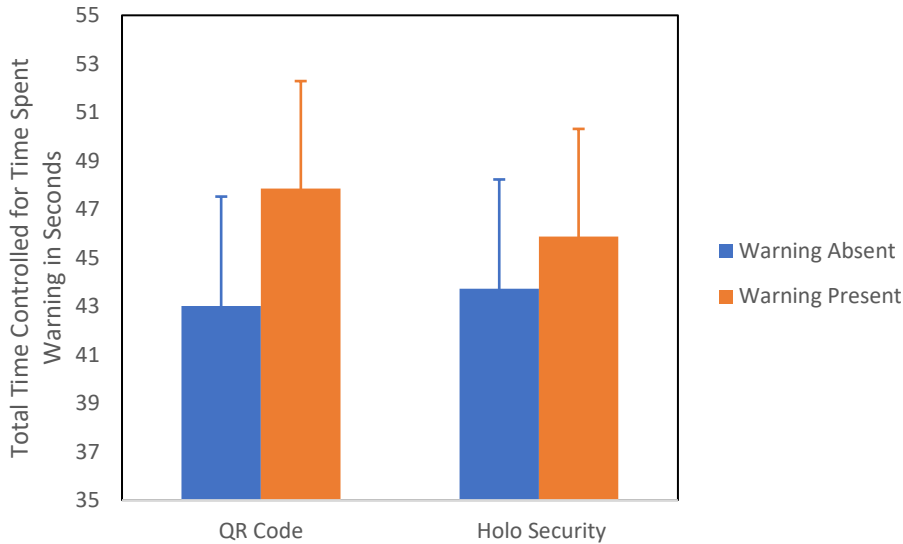
Figure 15. Influence of the warning presence or absence and the type of indicator on the total time spent examining the product package when controlling for the amount of time spent examining the warning.

None of the research questions examined the ratings that the participants input of if they thought the product was counterfeit or genuine. One of the exploratory analyses examined the counterfeit or genuine ratings as the dependent variables, with the presence or absence of the warning label, the presence or absence of the indicator, and gender, as the independent variables through an ANOVA. The presence or absence of the warning label did not influence the counterfeit and genuine ratings, with $F = 0.791$, $p = 0.374$. The presence or absence of the indicator was statistically significant, with $F = 10.684$, $p < 0.001$. The mean rating, where one is genuine, and zero is counterfeit, for the absence of the indicator was $M = 0.689$, and the mean for the presence of the indicator was $M = 0.567$ (see Figure 16). Gender was statistically significant, with $F = 5.717$, $p = 0.017$. The mean for males was $M = 0.672$, the mean for females was $M = 0.583$, where zero is counterfeit and one is genuine. The interaction between warning presence and indicator presence, was not statistically significant with $F = 2.366$, $p = 0.124$. The interaction between warning presence and gender was not statistically significant, with $F = 0.133$, $p = 0.716$.

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The interaction between indicator presence and gender was not statistically significant, with $F = 0.002$, $p = 0.966$. The interaction among warning presence, indicator presence, and gender was not statistically significant, with $F = 0.009$, $p = 0.926$.
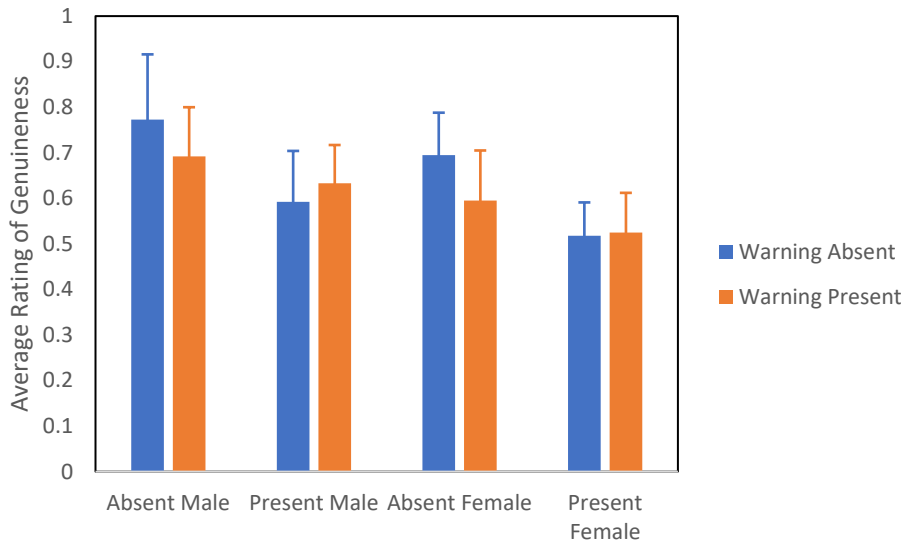
Figure 16. Influence of the warning presence, the indicator presence, and gender, on the overall rating of counterfeit or genuine.

Another exploratory analysis examined the counterfeit and genuine ratings as the dependent variable, and presence or absence of the warning label, the indicator type, and gender as the independent variables through an ANOVA. The presence or absence of the warning label was not statistically significant with $F = 0.265$, $p = 0.607$. The indicator type was not statistically significant with $F = 0.402$, $p = 0.526$. Gender was not statistically significant, with $F = 3.675$, $p = 0.056$. The interaction between warning presence and indicator type was not statistically significant with $F = 0.445$, $p = 0.505$. The interaction between warning presence and gender was not statistically significant, with $F = 0.132$, $p = 0.716$. The interaction between indicator type and gender was not statistically significant, with $F = 0.079$, $p = 0.778$. The interaction amongst warning presence, indicator type, and gender was not statistically significant, with $F = 0.552$, $p = 0.458$ (see Figure 17).

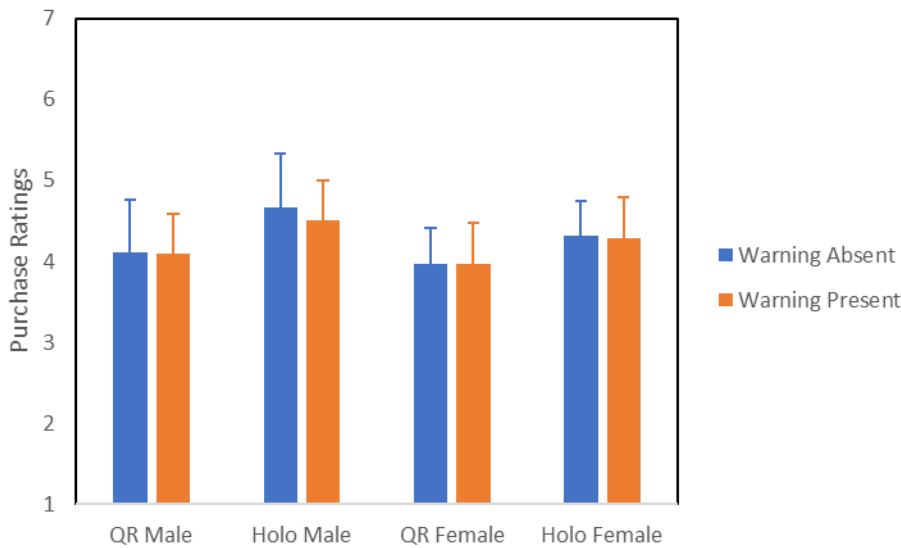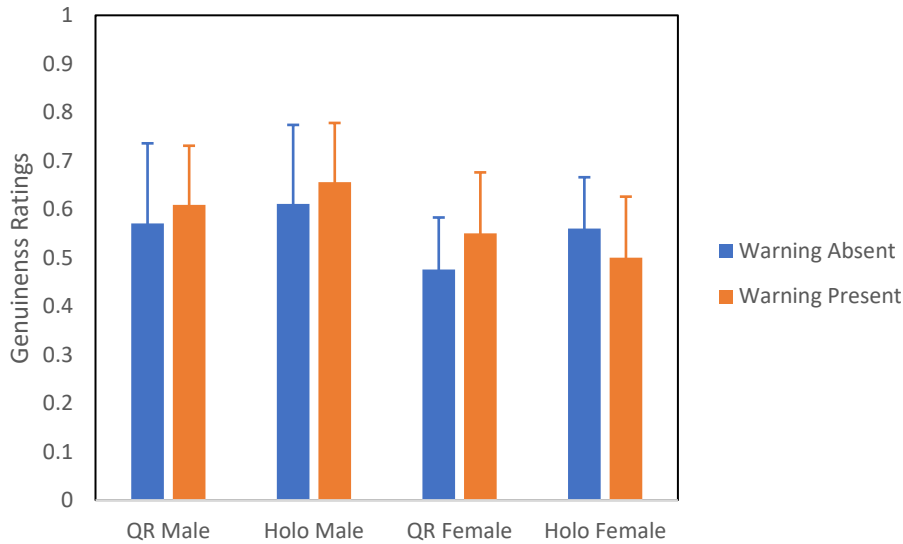Figure 17. Influence of the warning presence, the type of indicator, and gender, on the ratings of counterfeit or genuine.

Also examined was the influence that the presence or absence of the warning label, the counterfeit and genuine ratings, and gender, may have had on the total time the participant spent examining the product package, through an ANOVA. The warning label was statistically significant, with $F = 7.571$, $p = 0.006$. The mean time spent in the no warning label condition was $M = 42.688$, and the mean time spent in the warning label condition was $M = 48.087$ (see Figure 18). The counterfeit or genuine ratings was also statistically significant, with $F = 3.950$, $p = 0.047$. The mean time spent when the participant marked the product as counterfeit was $M = 47.337$, and the mean time spent when the participant marked the product as genuine was $M = 43.438$. Gender was statistically significant with $F = 9.184$, $p = 0.003$. The mean time spent examining the product if the participant was male was $M = 42.415$, and the mean time spent examining the product if the participant was female was $M = 48.360$. The interaction between warning label presence and counterfeit and genuine rating was not significant, with $F = 0.086$, and $p = 0.770$. The interaction between warning presence and gender was not statistically significant, with $F = 0.742$, $p = 0.389$. The interaction between the counterfeit and genuine rating

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and gender was not statistically significant, with $F = 3.37$, $p = 0.067$. The interaction among the warning presence, the counterfeit and genuine rating, and gender, was not statistically significant, with $F = 1.217$, $p = 0.270$.
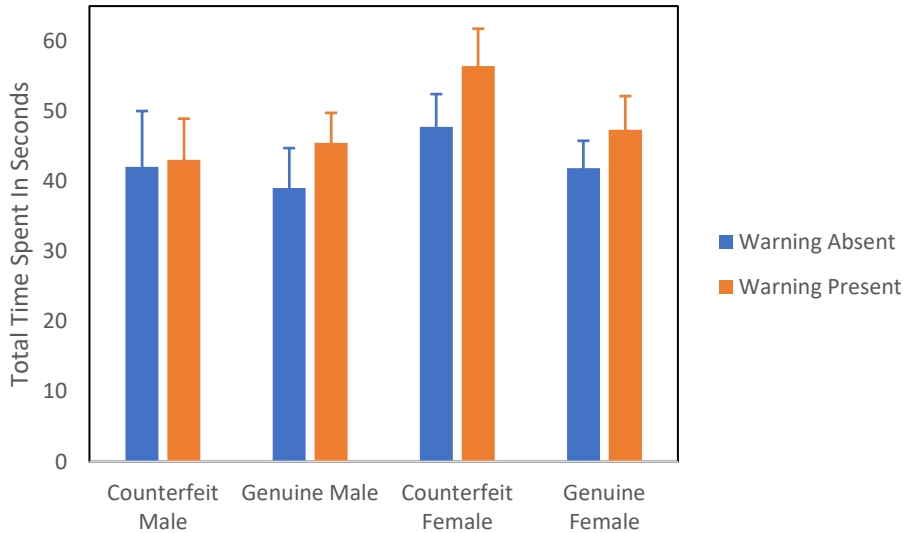
Figure 18. Influence of the warning presence, the rating of counterfeit or genuine, and gender, on the total time spent examining the product package.

The last of the exploratory analysis examined the influence of the counterfeit or genuine rating, the type of indicator, and gender, on the total time spent examining the product package. The counterfeit and genuine ratings were not statistically significant with $F = 0.481$, $p = 0.488$. The type of indicator was not statistically significant with $F = 0.189$, $p = 0.664$. Gender was not statistically significant, with $F = 3.793$, $p = 0.052$. The interaction between counterfeit and genuine rating and indicator type was also not statistically significant with $F = 2.234$, $p = 0.136$. The interaction between counterfeit and genuine rating and gender, was not statistically significant, with $F = 2.764$, $p = 0.097$. The interaction between indicator type and gender was not statistically significant, with $F = 0.241$, $p = 0.624$. The interaction among counterfeit and genuine rating, indicator type, and gender was not statistically significant, with $F = 0.511$, $p = 0.475$ (see Figure 19).
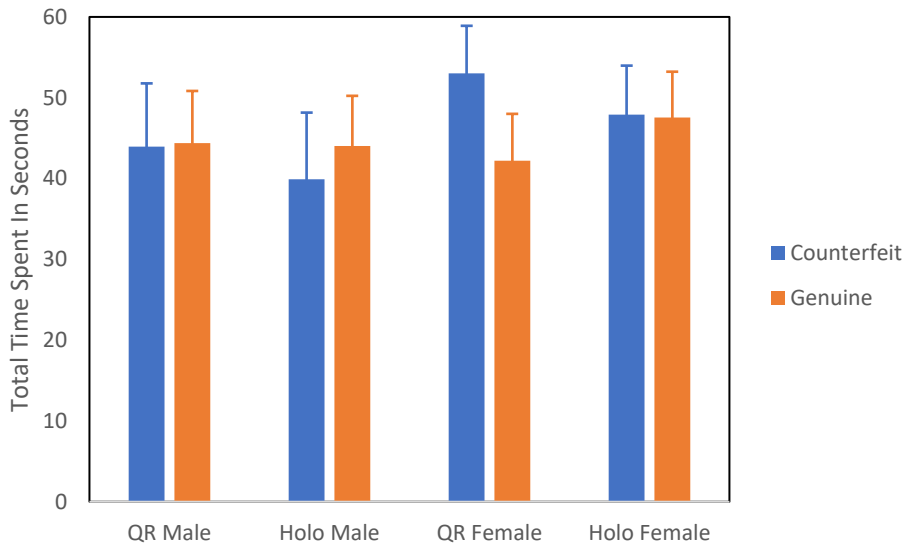
Figure 19. Influence of the counterfeit and genuine ratings, the indicator type, and gender, on the total time spent examining the product package.

Discussion

Warning Labels. Research question one addressed if the participants were spending more time examining the product package when the warning label was added to the package when compared to when the warning label was not on the package. In the initial statistical examination, it was found that the time the participants who saw the warning label on the product package spent more time overall examining the product package was statistically different from the participants who did not have the warning label added to the product package. On average, the participants who saw the warning label on the product package, spent almost five more seconds examining the overall product package than the participants who did not have the warning label added to the product package. These analyses also suggested that the presence or absence of the anti-counterfeiting overt indicators, and the two different types of the overt anti-counterfeiting indicators did not influence the participants to spend more time examining the product package.

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Once the statistical analyses were completed, it was noted that some of this difference may have to do with the amount of time the participants spent examining the warning label, and not just that they were spending more time overall on the product package. Thus, an exploratory analysis was completed examining the difference between the total time spent on the product package with the time spent on the warning for the participants in the warning condition, removed from the total time. For both the indicator present or absent analysis, and the type of indicator analysis, the results were not statistically significant. This would suggest that the increased amount of time seen in the original analysis would be due to the amount of time that the participants were spending examining the warning label, increasing the overall total time the participants spent examining the product packages. While this would suggest that the warning label did not influence the participants to spend more time looking at the overall package, it did mean that the participants spent extra time examining the warning label on the product package. These results would also suggest that the presence or absence of the overt anti-counterfeiting indicator and the type of overt anti-counterfeiting indicator did not change how much time the participant spent examining the product package. This would suggest that the time that the participant did not spend a significant amount of time examining the overt anti-counterfeiting indicators, if they examined the overt anti-counterfeiting indicators at all. Further research would need to examine the removal of the time spent on the warning label to ensure that this difference is truly due to the time spent on the warning label and not due to the time spent on the overall product package. Further research with different overt anti-counterfeiting indicators, and more indicators, may also show if the presence or absence of the indicators, or the type of indicators truly does not influence participants to spend more time examining the product packages. It would also be interesting to compare how much time was spent examining the warning label on

the products that were seen at the beginning of the study, as compared to the amount of time spent examining the warning label on the products at the end of the study. It would also be important to examine the warning label outside of the laboratory, to see if the results that were found in this study would be replicable in a real-world setting.

Research question 2c asked if the participants would spend a higher percentage of inspection time on the overt anti-counterfeiting warning labels in the warning condition, when compared to the participants in the warning absent condition. The results were not statistically significant, suggesting that regardless of the type of indicator, and the presence or absence of the warning label, the participants were spending about the same amount of time examining the added overt anti-counterfeiting indicator. This would suggest that there was no difference between the two indicators that were examined in this study, and that the presence or the absence of the warning label did not influence the participants to examine these indicators for longer. These results could suggest that adding an anti-counterfeiting warning label to product packages may have more of an effect on if consumers examine product packages for signs of counterfeiting more than an overt anti-counterfeiting indicator. These results would also suggest that there was no difference between the holographic indicator and the QR code indicator that were added to the product packages. Further research will be needed to replicate the results of this study, as well as to compare more overt anti-counterfeiting indicators.

Research question four asked if the presence of warning labels and the overt anti-counterfeiting indicator type affected the participant's purchase decisions. The purchase decision was on a scale of one to seven, where one was the participant would definitely not purchase the product, and seven was the participant would definitely purchase the product if they needed it. The presence of the warning label was not statistically significant, suggesting that the warning

label did not change how likely the participants saw themselves to purchase the product. This suggests that regardless of if a warning label was added to over-the-counter medication product packages, consumers may still purchase the products that they need. Further research must be completed to examine if this would be replicable in a non-laboratory experiment, as well in the case that the warning label is not a sticker added to a package but is a part of the product package.

Warning labels have shown to be effective at alerting the public to possible health effects of cigarettes (Hassan, Shiu, Thrasher, Fong, & Hastings, 2008). When comparing the United States to the United Kingdom, the United Kingdom had stricter regulations, and more prominent warning labels on cigarettes, and the participants from the United Kingdom had ore awareness of the effects of smoking that the participants from the United States. The warnings for the United Kingdom went more into depth about the possible health effects of smoking, than the warning labels on cigarettes in the United States, and the participants from the United Kingdom showed increased awareness of the effects, and increased depth of processing in part due to the elaboration on the warning labels. At the time the samples were gathered, the United Kingdom had just created a new warning label for their cigarette packages, so the authors noted that the effects could be due to the novelty of the warning label. However, there was still awareness of the effects of smoking from warning labels in the United States, and there were gradual declines in smoking in both the United States and the United Kingdom. As a result of this experiment, it is thought that adding warning labels to product packages to alert consumers about the possibility of counterfeit products may influence consumers to be more aware of the possibility of counterfeits. If the warning labels can be designed in such a way to both inform the consumer of the threat and inform the consumer what action to take when the product is suspected to be

counterfeit, they may be effective at reducing deceptive counterfeits. If warning labels are added onto genuine products, counterfeiters will also have to add warning labels to their counterfeit products to make them look genuine, running a new risk of the product potentially getting noticed as a counterfeit. While adding a warning label to products will not change non-deceptive counterfeiting, it will protect consumers and businesses from the possible harms unintentional purchases of counterfeit products.

One of the difficulties for pharmaceuticals specifically is that there are not a lot of places to add a warning label to the product. Other products, such as food, where there is still a high risk of ingesting a counterfeit, may be a better product to pilot a warning label to examine the impact. It would also be important to examine the longitudinal effects of the warning labels, as it would be important for them to maintain effectiveness overtime, as combating counterfeiting is a vigilance task. While a systemic protection against counterfeits would be the most effective, it is important to also ensure that our consumers have the opportunity to protect themselves from potential harm from counterfeits.

While the warning labels may be an effective tool to help prevent harm from reaching consumers, it is questionable if this is the case for overt anti-counterfeiting indicators. Further research that incorporates the indicators added onto the design of the package, rather than just adding a sticker to the package, will make a stronger case if businesses should continue to invest time and money into adding overt anti-counterfeiting indicators to product packages.

Overt Indicators. Research question 2a suggested that consumers would pay more attention to the anti-counterfeiting indicators when the warning labels were present. This was not statistically significant, suggesting that the amount of time the participants spent on the overt anti-counterfeiting indicators did not differ if the warning label was present or not. While further

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research is necessary, these results would suggest that, at least for the QR code and the holographic overt anti-counterfeiting indicators, neither one of these caught the participants attention more than the other, and that the warning label did not influence the participants to spend more time examining the product for overt anti-counterfeiting indicators. This may suggest that the cheaper alternative between these two could be used as an overt anti-counterfeiting indicator, or that if an anti-counterfeiting warning is added to the product package, no overt anti-counterfeiting indicators may need to be added. It is possible that an anti-counterfeiting warning label may be sufficient to increase consumer awareness of the possibility of a counterfeit. Further work should be completed to compare more than just these two types of overt anti-counterfeiting indicators, as well as to replicate these results.

Research question 2b examined if the time to the first inspection of the overt anti-counterfeiting indicators added to the product package would be shorter in the warning label condition. This was examined through using the actual time it took for the participants to examine the overt anti-counterfeiting indicators, as well as using the proportion of time to first inspection of the overt anti-counterfeiting indicators over the total time the participant spent examining the product package, to control for total time the participant spent examining the product package. The actual time that the participants took to examine the overt anti-counterfeiting indicators was statistically significant between the warning present or absent conditions. In the warning absent condition, the participants spent less time examining the product package before their first glance of the overt anti-counterfeiting indicator, when compared to the participants in the warning label present condition. The participants in the warning label absent condition spent on average, about four seconds less examining the overall product package prior to their first glance of the overt anti-counterfeiting indicator ($M = 17.886$

for the warning label absent condition, and $M = 21.879$ in the warning label present condition). This would suggest that it is possible that the participants in the warning label present condition spent more time examining other parts of the product package before they examined the overt anti-counterfeiting indicator added to the product package. However, when the data was analyzed with the proportion of the amount of time the participants spent examining the product package over the total time the participants spent examining the product package, to control for the different amounts of times that the participants spent examining the product package, this relationship was no longer statistically significant. It is possible that the overall amount of time the participant spent examining the product package may be affecting the results of the first statistical analysis. Further research will be needed to examine if the participant spends more time examining other parts of the product package prior to examining the overt anti-counterfeiting indicator. It was also not documented where the participant was looking prior to when they looked at the overt anti-counterfeiting indicator, so it was unknown if the participants saw the warning label first or the overt anti-counterfeiting indicator first. If the participants saw the warning label first, the amount of time they are spending examining the warning label may be the reason why their overall times were delayed for their first glance of the overt anti-counterfeiting indicator when compared to the participants who did not see the warning label.

Research question three asked if the overt anti-counterfeiting indicators were noticed by the participants, both through the eye tracking data, as well as what the participants stated that they noticed about the overt anti-counterfeiting indicators. The statistics run to examine this question were not statistically significant, suggesting that at least from a behavioral standpoint, the amount of time that the participants spent examining the overt anti-counterfeiting indicators did not differ between the QR code and the holographic sticker. See Appendix C for the

participant comments. In the participant comments, for the products that had a QR code indicator

on them, the QR code was noted in the comments 55 times across all the different products.

Interestingly, across all the QR code products with the sticker, the holographic security sticker

was mentioned seven times in the comments. For the holographic indicator products with the

sticker, across all the comments for all the products, the holographic sticker was mentioned 36

times, and interestingly, the QR code sticker was only mentioned once. Of course, not all the

participants made comments, and even if the participant made comments, they may not have

mentioned the added indicators, even if they were seen. Some of the participants noted in their

comments that they did not see the QR code, or they did not see the holographic security sticker,

and that influenced their ratings. This would suggest after seeing one of the indicators, the

participants may have started looking for the indicator to help them determine if it was a genuine

product or a counterfeit. These comments from the participants suggests that by at least some

part of the sample, participants did notice the added indicators, or the lack of the other type of

added indicator on the product package.

For research question four, which examined how likely a participant was to purchase a

product, there was a statistically significant difference between the QR code indicator added to

the product package and the holographic sticker added to the product package on the participant

purchase decisions ($M = 4.024$ for QR code purchase likelihood, $M = 4.406$ for holographic

sticker purchase likelihood). While the difference is not much, so it may not be practically

significant, further research would be needed to confirm if the QR code is perceived as being less

secure or may affect consumer purchase decisions more than other overt anti-counterfeiting

indicators. Further research should examine the QR code being designed into the product

package rather than a sticker being added to the product package to ensure that it is not just the

sticker aspect of this particular study that is influencing participants to mark their likelihood of purchase lower than for the packages that had the holographic sticker added to them.

     Genuineness Ratings. Exploratory analyses are important, as they can help to inform some of the next possible research projects that could be completed. They need to be interpreted cautiously, as they were not the original research questions posed by this research. However, they can provide interesting insight to other mechanisms that may be driving consumer behavior, especially if they are replicated in a second study. One of the exploratory analyses examined the presence or absence of both the warning label and the indicators on the ratings off the product's genuineness. The participants were forced to choose if they thought the product was a genuine product or a counterfeit product. While the warning label's presence or absence did not influence what the participant chose, the results of this exploratory analysis suggested that the presence or absence of an overt anti-counterfeiting indicator might. In this particular study, the products that did have an added overt anti-counterfeiting indicator were rated as counterfeit more than the products that did not have an added overt indicator ($M = 0.689$, for the no added indicator condition, and $M = 0.567$, for the added indicator condition, where a rating of zero is a counterfeit, and a rating of one is a genuine product). Further research will need to examine this, as it is possible that this may different if there are true counterfeit products used as stimuli in the experiment. This effect may have also occurred because the added indicators were not incorporated onto the product packaging, as the QR code and the holographic security tag were both stickers added to the packaging. It may be the case that because they were stickers, the participants were more suspicious of the indicators. In this particular study, the participants were also deceived and told that some of the products may be genuine, and that some or the products may be counterfeit. This task may have primed the participants to rate some products as

counterfeit, even if they may not have otherwise. Thus, more research is needed, but this is an interesting finding that should be interpreted with extreme caution, but merits further investigation.

A second exploratory analysis built on the previously discussed one, to see if there was a difference in how the participants rated the genuineness of the product, examined by both the presence or absence of the warning label, the type of indicator added to the product, and gender. Once again, the warning label was not statistically significant. However, interestingly, the type of indicator was not statistically significant, suggesting that it did not influence how the participants rated the product, as either counterfeit or genuine. For this analysis, gender was not statistically significant, but was trending toward statistical significance, and will need to be investigated further. There may be some reason why there was a statistically significant difference between males and females for indicator presence, but not indicator type. Are these results replicable with a different task, and if so, are there other overt anti-counterfeiting indicators that change the participant's ratings, or is this consistent across all different types of overt anti-counterfeiting indicators?

Yet another exploratory analysis examined the total time the participants spent examining the product package with the presence or absence of the warning label, the ratings of counterfeit or genuine that the participants put in for the product, and gender, as the independent variables. The counterfeit and genuine ratings that the participants input was statistically significant, with less time being spent on the products that the participants marked as genuine ($M = 43.438$), than the time spent on the products that the participants marked as counterfeit ($M = 47.337$). This would suggest that the participants were looking for information to confirm that the package was in fact a genuine package and were ending their search as soon as they found something to confirm that

the package was genuine. Of course, this is just speculation about what the participants may have been doing but could be easily studied in future research. The warning label was also statistically significant, suggesting that it may have been playing a role, when combined with the ratings, to influence how much time the participants spent examining the product package ($M = 42.688$, no warning label added, $M = 48.087$, warning label added).

Lastly, a fourth exploratory analysis was conducted that examined the influence of the genuineness rating, the type of indicator added to the product package, and gender, on the total time that the participants spent examining the package. Both the type of indicator and the counterfeit or genuine rating were not statistically significant influencers of the time the participant spent examining the product package. This would suggest that the influence of the counterfeit and genuineness ratings on the total time the participants spent examining the product package may have other relationships that influence this relationship. Further research will be needed to completely understand this relationship, and what all may have been influencing the participants rate the products as genuine or counterfeit. Gender was also not statistically significant, but was approaching statistical significance, and will need further investigation in future research to truly determine if it is a factor in total time spent examining products.

Gender Effects. For first exploratory analysis, gender was added to see if there were any differences in how the gender of the participant may have influenced their counterfeit and genuineness ratings. The gender of the participants was statistically significant, with males rating the products as more genuine than females ($M = 0.672$ for genuineness rating for males, and $M = 0.583$ for genuineness rating for females, where zero is counterfeit, and one is genuine). Further research will need to investigate if this difference is consistent across multiple types of participants, and if there are other factors that may have played a role in males rating the

packages as more genuine overall than females. Males may have seen the warning labels, or the overt indicators, or they may have even spent overall more or less time examining those added indicators, than females, and this may explain some of this difference. There may also be other factors not considered in this study that may have influenced the difference between male and female ratings of genuineness.

Gender was examined in the third exploratory analysis, which analyzed the total time spent inspecting the products, and how gender, presences of warning labels, and genuineness ratings affected the total time spent inspecting the product. Gender was statistically significant, suggesting that the gender of the participant may have influenced how much time they spent examining the product package ($M = 42.415$, for male participants, $M = 48.360$, for female participants). This may be a part of why females were more likely to rate something as counterfeit, than males, but further investigation is needed into exactly why males are spending less time examining the product packages than females.

Limitations. There were many limitations to this study. Some of the placements of the warnings on the product packages did cover up a bit of the package information, although the researcher did everything they could put the warning labels in a place that covered up as little of the package information as possible. The participants may have been more suspicious and been more likely to say that the product was counterfeit, as the warning labels and the indicators were all stickers added to the packages. The most ideal study would be to have the QR code, the holographic security sticker, and the warning added on to the original package design so that participants are not suspicious that the products are counterfeit because of the added stickers. Some of the packages and the indicators were damaged throughout the course of the experiment, which may have also influenced the participant's judgements. The first package that all the

participants received was the Aleve™ package, and this was intended to be a test package to prevent any novelty effects from the warning label being added. However, not all the participants may have seen the warning label on the Aleve™ package, meaning there may have still been some novelty effects when the participants first saw the warning label.

Another limitation was that the confidence of the participant's ratings was not gathered. In future research, it would be interesting to see if how confident the participant was in their ratings changed across several different types of variables.

Another limitation would be that all the product packages were genuine, and it would have been interesting to compare the ratings and the eye tracking data from actual counterfeit products to genuine products. Some of the participants noted that they had never seen some of the brand names before, such as Robitussin™, and other participants noted that they had never seen Pepto Bismol™ in the pill form before, and both may have influenced their perceptions of the genuineness of the product, as well as their judgments of the product.

A significant limitation was that when examining the product package of Tums™, the participants spent a lot less time examining the product package when compared to the other product packages. This may have influenced the results of the analyses, and in future research, it will be important to do more pilot research to ensure that the participants will examine the product packages for similar amounts of time. Similarly, on the Zyrtec™ package, the warning label did cover up a part of the bottle that the participants in the warning label absence condition would have seen. This may have influenced the participants ratings in the warning label condition, and the time spent examining the product package may have changed if warning label had been placed in a different location. Future research should make sure to pick product packages that will have room to add the indicators and warning labels.

An additional limitation was that some of the participants did not fully look over the entirety of the product before they made their decision about the authenticity of the product and making their judgements about how likely they were to purchase it. There was no real reason to exclude these participants, so they were included in the analysis, and they may have affected the results. For the analysis of the eye tracking data, a total of 20 number of participants were processed using the 2D eye tracking method over the 3D eye tracking method. For the majority of the participants who were processed using the 2D eye tracking method, their eyelashes got in the way, they squinted, or they were looking too far down, and the 3D eye tracking method had difficulty finding the participant's pupils. Lastly, the Qualtrics questionnaire that the participants completed for each of the products had two four ratings on the slider for the question about how much the participants trusted the product, and for the question that asked the participant how likely they would be to purchase the product.

Conclusion. Further research will need to be completed to both replicate the results that were found in this study, as well as to fill in the gaps and investigate new phenomena in how consumers may be inspecting product packages for signs that it is a genuine product or a counterfeit product. Many of the findings in this study are preliminary, as there was very little research that had been completed upon consumer involvement in the anti-counterfeiting process. Further research needs to be completed before strong conclusions can be drawn about if consumers should be involved in the verification of products as genuine or counterfeit, and just what it is they are examining product packages for when they attempt to determine if the product is a genuine or a counterfeit.

Based on the results of this study, it appears as though the warning label informing consumers about the possibility of a counterfeit may be effective in alerting consumers to pay

attention to the product package. Overall, the presence of the warning label did increase the participant's overall time spent examining the product package (when the warning label was included in the total time). This suggests that the participants spent a good amount of time examining and reading the warning label. Further research is needed to confirm if the warning label is an effective tool to inform consumers about the possibility of counterfeits, as well as research examining if the novelty effect of the warning label may be at play. Future research that includes true counterfeits in the mix may also help to clarify some of the relationships that were found in the present study. Further research on what it is about the product packages, outside of the added overt anti-counterfeiting indicators that influence the participants ratings of counterfeit or genuine would be particularly insightful to understand what it is consumers may be thinking may show a difference between a genuine product and a counterfeit one. Research involving other types of overt anti-counterfeiting indicators may be important to truly tease out what types of overt anti-counterfeiting markers consumers are looking for. It would be particularly interesting to see a study where the warning label and the indicators are not just added stickers to the product packages but are incorporated onto the package design. It would be enlightening to see if the relationships found in research with added stickers still stand when the indicators and the warning label are integrated into the package design.

Before conclusions can be drawn about how useful it is to have the consumers be involved in the counterfeit product detection process, it is important to understand what it is they are looking for, and how products can be better designed to meet this process. If there are no patterns in the way that consumers are attempting to detect counterfeit products, it may be in the best interest of manufacturers to discontinue adding overt anti-counterfeit product indicators, since these indicators have to be changed frequently anyway (Kilcullen, 2016). In this case, it

would be more important to be examining what can be done to increase product security through

the use of covert anti-counterfeiting indicators.

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Product

[   ]

If I were in need of taking this medication, I would trust this product to be the genuine item.

| Strongly Disagree | | | | | | Strongly Agree |
| 1 | 2 | 3 | 4 | 4 | 5 | 6 | 7 |

The product I just saw was

Genuine

Counterfeit

If you saw this product to purchase, how likely would you be to purchase it?

| Would not Purchase | | | | | | Would Purchase |
| 1 | 2 | 3 | 4 | 4 | 5 | 6 | 7 |

Please note what sort of things you saw on the product or noticed about the product that made you give the above ratings for the product.

[   ]

Figure 20. A screenshot image of the survey that the participants saw for each product.

Appendix B

Table B.1.
Marginal Means for Research Question 1, Indicator Presence, Warning Presence/Absence, Total Time in Seconds Spent Examining Product

Warning Label	Indicator Presence	Marginal Mean	95% CI for Mean Difference		SE
			Lower	Upper	
Absent	Absent	42.549	38.460	46.638	2.083
Present		47.172	43.150	51.195	2.049
Absent	Present	43.368	40.135	46.600	1.647
Present		48.263	45.083	51.443	1.620

Table B.2.
Marginal Means for Research Question 1, Indicator Type, Warning Presence, Total Time in Seconds Spent Examining Product

Warning Label	Indicator Type	Marginal Mean	95% CI for Mean Difference		SE
			Lower	Upper	
Absent	QR	43.015	38.483	47.547	2.307
Present		49.096	44.638	53.554	2.269
Absent	Holo	43.721	39.189	48.253	2.307
Present		47.430	42.971	51.888	2.269

Table B.3.
Marginal Means for Research Question 2a, Indicator Type, Warning Presence, Total Indicator Inspection Time in Seconds

Warning Label	Indicator Type	Marginal Mean	95% CI for Mean Difference		SE
			Lower	Upper	
Absent	QR	1.300	0.964	1.635	0.171
Present		1.579	1.241	1.916	0.172
Absent	Holo	1.174	0.841	1.508	0.169
Present		1.334	0.990	1.678	0.175

Table B.4.

Marginal Means for Research Question 2b, Indicator Type, Warning Presence, Time to First Glance of Indicator

Warning Label	Indicator Type	Marginal Mean	95% CI for Mean Difference		SE
			Lower	Upper	
Absence	QR	18.228	14.414	22.043	1.939
Presence		19.316	15.478	23.154	1.951
Absence	Holo	17.544	13.753	21.335	1.927
Presence		24.442	20.555	28.329	1.976

Table B.5.

Marginal Means for Research Question 2b, Indicator Type, Warning Presence, Proportion of Time to First Glance of Indicator

Warning Label	Indicator Type	Marginal Mean	95% CI for Mean Difference		SE
			Lower	Upper	
Absence	QR	0.415	0.358	0.473	0.029
Presence		0.412	0.354	0.470	0.029
Absence	Holo	0.436	0.374	0.498	0.031
Presence		0.478	0.419	0.536	0.030

Table B.6.

Marginal Means for Research Question 2c, Indicator Type, Warning Presence, Proportion of Time Spent Indicator

Warning Label	Indicator Type	Marginal Mean	95% CI for Mean Difference		SE
			Lower	Upper	
Absence	QR	0.034	0.027	0.042	0.004
Presence		0.032	0.025	0.040	0.004
Absence	Holo	0.031	0.024	0.039	0.004
Presence		0.030	0.023	0.038	0.004

Table B.7.
Marginal Means for Research Question 3, Indicator Type, Total Time Spent Indicator

		95% CI for Mean Difference		
Indicator Type	Marginal Mean	Lower	Upper	SE
QR	1.438	1.201	1.676	0.121
Holo	1.252	1.012	1.491	0.122

Table B.8.
Marginal Means for Research Question 3, Indicator Type, Proportion of Time Spent Indicator

		95% CI for Mean Difference		
Indicator Type	Marginal Mean	Lower	Upper	SE
QR	0.033	0.028	0.039	0.003
Holo	0.031	0.026	0.036	0.003

Table B.9.
Marginal Means for Research Question 4, Warning Label, Indicator Type, Gender, Purchase Ratings

Warning Label	Indicator Type	Gender	Marginal Mean	95% CI for Mean Difference Lower	Upper	SE
Absence	QR	Male	4.111	3.454	4.768	0.334
		Female	3.976	3.546	4.406	0.219
Presence		Male	4.094	3.601	4.587	0.251
		Female	3.967	3.458	4.476	0.259
Absence	Holo	Male	4.667	4.009	5.324	0.334
		Female	4.31	3.879	4.740	0.219
Presence		Male	4.500	4.007	4.993	0.251
		Female	4.283	3.774	4.792	0.259

Table B.10.
Marginal Means for Research Question 1 Correction, Indicator Presence, Warning Presence, Total Time Controlled for Time Spent Warning

Warning Label	Indicator Presence	Marginal Mean	95% CI for Mean Difference Lower	Upper	SE
Absent	Absent	42.549	38.493	46.605	2.066
Present		45.283	41.293	49.273	2.033
Absent	Present	43.368	40.161	46.574	1.633
Present		46.866	43.712	50.021	1.607

Table B.11.

Marginal Means for Research Question 1 Correction, Indicator Type, Warning Presence, Total Time Controlled for Time Spent Warning

Warning Label	Indicator Type	Marginal Mean	95% CI for Mean Difference		SE
			Lower	Upper	
Absent	QR	43.015	38.507	47.523	2.294
Present		47.852	43.417	52.287	2.257
Absent	Holo	43.721	39.213	48.229	2.294
Present		45.880	41.445	50.315	2.257

Table B.12.

Marginal Means for Exploratory Analysis, Indicator Presence, Warning Presence, Gender, Genuineness Rating

Warning Label	Indicator Presence	Gender	Marginal Mean	95% CI for Mean Difference		SE
				Lower	Upper	
Absence	Absent	Male	0.773	0.629	0.916	0.073
		Female	0.695	0.602	0.788	0.047
Presence		Male	0.692	0.585	0.800	0.055
		Female	0.595	0.484	0.705	0.056
Absence	Present	Male	0.592	0.479	0.704	0.058
		Female	0.518	0.444	0.591	0.037
Presence		Male	0.633	0.549	0.717	0.043
		Female	0.525	0.438	0.612	0.044

Table B.13.

Marginal Means for Exploratory Analysis, Indicator Type, Warning Presence, Gender, Genuineness Rating

Warning Label	Indicator Type	Gender	Marginal Mean	95% CI for Mean Difference		SE
				Lower	Upper	
Absence	QR	Male	0.571	0.406	0.736	0.084
		Female	0.476	0.370	0.583	0.054
Presence		Male	0.609	0.487	0.731	0.062
		Female	0.550	0.424	0.676	0.064
Absence	Holo	Male	0.611	0.448	0.774	0.083
		Female	0.560	0.453	0.666	0.054
Presence		Male	0.656	0.534	0.778	0.062
		Female	0.500	0.374	0.626	0.064

Table B.14.

Marginal Means for Exploratory Analysis, Genuineness Rating, Warning Presence, Gender, Total Time Spent Examining Product

| Warning Label | Genuineness Rating | Gender | Marginal Mean | 95% CI for Mean Difference | | SE |
				Lower	Upper	
Absence	Counterfeit	Male	42.077	34.125	50.029	4.051
		Female	47.773	43.101	52.444	2.380
Presence		Male	43.046	37.153	48.940	3.002
		Female	56.452	51.128	61.776	2.712
Absence	Genuine	Male	39.045	33.349	44.741	2.902
		Female	41.859	37.934	45.785	2.000
Presence		Male	45.491	41.217	49.765	2.117
		Female	47.357	42.556	52.158	2.446

Table B.15.

Marginal Means for Exploratory Analysis, Genuineness Rating, Indicator type, Gender, Total Time Spent Examining Product

| Genuineness Rating | Indicator Type | Gender | Marginal Mean | 95% CI for Mean Difference | | SE |
				Lower	Upper	
Counterfeit	QR	Male	43.935	36.096	51.774	3.989
		Female	53.017	47.133	58.901	2.994
Genuine		Male	44.381	37.927	50.836	3.285
		Female	42.201	36.399	48.004	2.953
Counterfeit	Holo	Male	39.894	31.632	48.157	4.205
		Female	47.916	41.860	53.973	3.082
Genuine		Male	44.038	37.840	50.235	3.154
		Female	47.569	41.919	53.219	2.875

Appendix C

Participant comments based on product, if there was a warning label added or not, and their ratings of counterfeit or genuine.

Aleve™: No Warning Label Added Genuine

- The ingredients
- The brand name was familiar, it appeared to include the dosage and proper labels
- All the labels and print seemed legitimate
- Made in and expiration stamp appeared legit
- Ingredient list, indented bin number, Bayer stamp
- The labeling seemed real just a few things seemed off though
- This seemed like a pretty realistic package. I have taken this medication a long time ago so I figured this was probably real.
- There was intentions with information such as like the date or a different piece of information
- The name brand and Bayar
- The coloring and brand logo seemed correct
- Colors and seemed like good quality
- Packaging seemed to be the normal. Had the lot and expiration and the imprinted information by it.
- Manufacturer number
- Stamps in the carboard
- I notice drug facts and the packaging seemed reliable
- I saw indented numbers and letters on the box
- Name, ingredient, company that made product
- It gave the facts about the drug where I thought they would be and it was a high quality box
- Product info imprinted on the box. Health warnings.
- The company name
- Some strange directions for use
- It was very thorough with instructions and warnings. It looked to be from a known brand
- Drug facts and warnings seemed to match what is typically on genuine package, also did not see offcolor or odd typeface usually seen with counterfeit products.
- Expiry date was stamped on the bottom
- I think it's a real product I just don't use name brand medicine
- Tiny print with all the warnings
- The information on the back and the company name
- Bayer several times

Aleve™: No Warning Added Counterfeit

- Many warning labels and consult your doctor if any of these symptoms happen to you.
- It said made in India
- The font of the letters seemed a little bit off
- The package was made in India and I'm not sure if meds would be made there or not.

- The main image of the bottle seemed not like usual logo look
- Color seemed wrong
- It looks very close to the real thing but I remember it having red in the stores. If I did not know I was judging it to be counterfeit or genuine I would think it's real.
- The drug amounts didn't match up but that might be how drugs usually are.

Aleve™: Warning Added Genuine

- Strange colors
- No spelling errors in words or misleading information
- Ingredients, warnings
- Indents in cardboard.
- I saw that this product looked similar to other packages like this.
- Packaging was clear and directions were authentic sounding. White sticker made me question its authenticity.
- I saw a possible counterfeit sticker that makes me a little nervous that it isn't real
- Packaged looked legit, was one sticker one it that did say it could be counterfeit
- Color matched expectancy, no misspellings, imprinted expiration. Made in India made me question its authenticity.
- The package is sealed, making it seem safe to purchase. Contained instructions and warnings on box
- I think it was genuine, personally I hate taking any form of pills- therefore I don't buy them if I don't absolutely have to.
- The package looked authentic and was embossed with lot number and expiry date.
- Clean print on box and proper labeling
- Where it was manufactured
- Warning labels in terms of use, directions on how many tablets should be taken, how many tablets are in the bottle itself and overall name and labeling of the product with things including color, size and feel.

Aleve™: Warning Added Counterfeit

- The name of the product was wrong and missing the I in alieve
- Color, and the word.
- I don't know how to explain but the writing was throwing me off, just didn't look right
- The box repeated the same warnings on different sides of the box.
- The label was too large looking
- It looks very much like what I would expect it to look like and if I was going about normal life I would not think twice about it. However examining it, it felt cheap and not professional
- No government approvals. The title "aleve" was blurry
- The 'made in Bayer'
- On the bottom there was a warning label that said "may be counterfeit"
- The color seemed a little off from normal alieve
- A warning of the product being counterfeit possibly.
- The definition of the logo print

- Made by part of packing did not include anything after that. Aleve might have an "i" in the name but not sure. Also I think the real packaging might have a brighter blue.
- The box said the product was made in India but distributed by a company out of New Jersey. There was a warning sticker on the box saying it may be counterfeit.
- I was suspicious of the medicines expiration date as it usually should last longer as well as the product coming from India
- Mention of pregnancy on first line

Advil™: No Warning Added Genuine

- The main title page of packaging
- Packaging was sound. But the amount of space for the barcode seems odd for this type of medication.
- Seemed right to me and had all information on the sides of the box.
- All of the labeling made sense and it looked real.
- This product seemed like the normal Advil that I buy regularly from the store. I don't look at the packages too in depth but it appeared to be real.
- It looked like the other Advil boxes I have seen. There was nothing that I thought looked suspicious.
- Familiar packaging yellow letters stand out.
- The packaging seemed correct, the only thing that makes me pause is that Advil is written on the photo of the pill.
- It is a brand name.
- Manufacturer
- I could[n't] find anything to let me know it wasn't real.
- That's the real deal
- Lots of drug facts that seemed normal
- Everything seemed right for this package.
- Drug facts, uses, side effects, warnings, expiration date
- Date inconsistent. Dosage correct.
- The company name.
- It appears genuine as the color is correct and is what I have seen before. Packaging seems older even with the expiration date.
- Clearly stated lot number, directions and warnings match what I typically see on these bottles/boxes
- Looks how I remembered with the blue and red. Only thing that threw me off was the NSAID being written on the front, but it could just be on the American box only and not the Canadian one that I'm used to.
- The coloring of the packing seems to be correct. I also recall seeing Advil in the store that had a longer box, which is different than most medicines, in my opinion.
- Looks real. Familiar with the product because I like it.
- I think it was genuine but the ingredients list was confusing and I don't have confidence in my ability to spot a fake anymore.
- Packaging color looked correct and distributed out of NJ. Contact information of company.
- Expiration date, trademark R in title, directions, inactive ingredients
- The product overall looks and seems legitimate. Also "Pfizer" manufacturer.

- It looks exactly like the Advil I would see in the pharmacy section - the warnings appear he same and the background design also looks identical
- Warnings and ingredients

Advil™: No Warning Added Counterfeit
- When I have purchase[d] this item, it usually is not boxed. The large font on the box was throwing me off too.
- I do not believe Advil makes [ibuprofen]
- Looks right but excessive warnings to talk to doctor if followed by a list that covers two sides of the box.
- Too much writing on the outside of the packaging.
- There appeared to be to[o] much information about the drug presented on the box, made it a bit suspicious.
- Unless NJ is the medicine capital of the US I believe that is where the counterfeit products are coming from.
- The box looked upside down
- Initially thing looked good, but old copyright stuff, weird ingredients, and general strange health and safety info threw things off. Big one was typically in talks of poisoning for a US product they include phone numbers for poison control.
- Some of the wording for the warnings seemed odd to me.
- Pfizer name, couple .coms, nothing about sealed for your protection.
- Warning to pregnant women seems off

Advil™: Warning Added Genuine
- Has Pfizer listed on box, no spelling errors and had all necessary information that's supposed to be on the box
- Looks like the box I buy every time
- Nothing seems wrong with the package
- It looked exactly like what I've bought in the store before. No typos or errors.
- Nothing stands out to lead me to believe it's counterfeit
- It looks exactly like what I have bought before. The only reason not to buy it would be the possible counterfeit sticker
- It all looks correct to me
- Everything looked correct and sounded like pills were in bottle
- Color, shine, weight all feel authentic. I am more familiar with this product as well.
- The font and box looks he exact same as previous Advil I have purchased. Sounded like there were pills in the bottle and were about right size.
- Very familiar and the spelling and look seems correct
- Believe 100% it is the genuine product.
- It looks like Advil, I'm not sure if there was anything suspicious
- clear graphics
- Clean print proper labels
- Barcode scanner
- It has the Pfizer copyright on the box. Nothing seemed unordinary.

Advil™: Warning Added Counterfeit
- It said that this product can cause asthma.
- A lot of drug facts
- From a distance it looks proper and genuine but upon closer inspection, there are many flaws. Chiefly the big and bulking text writing and how not everything is lined up properly
- Pfizer without sticker
- Drug facts were continued on another side of the box vs just peeling sticker to reveal more information
- I felt like the look of the pill was different because I have taken Advil before and it looked a little off
- The facts about the drugs seemed to have a typo.
- Logo seems off
- There were kind of grammatical errors. Also there was a part that said "definitely directed" instead of simply saying directed which seemed off. Also the phone number at the bottom seemed like it was missing a number.

Bayer™: No Warning Added Genuine
- The overall packaging
- I have seen this product before and I believe it to be genuine
- Appeared real. The lot and expiration were well stamped into packaging.
- Directions, warning labels, front labels
- I don't think there was any aspect of the product that gave me suspicious of being counterfeit.
- There was nothing that seemed to be off about it. All the markings looked real to me.
- Also the Bayer name and familiar packaging.
- Looked how I remembered it to look.
- The heart was a little confusing since it was aspirin but I did like the colors.
- Overall cleanliness of the package/ no perceived errors
- Drug facts
- Seemed normal all around
- Color of package, drug fact, ingredient, side effect
- Didn't believe aspirin was an NSAID
- The company name
- Bayer is fairly common this seems legit nothing stood out as a fake.
- Lots of Bayer
- I have seen this product a lot and it looks how I remembered it. The expiry date being stamped onto the bottom makes it seem real and the coloring/font is how I remembered.
- Unfamiliar with product so I wouldn't not use but it looks real.
- Warnings, active ingredients, directions.

Bayer™: No Warning Added Counterfeit
- The font just looked a bit unfamiliar to me and I chose to go with my gut
- The packaging was weird and it stated it was for heart pain but on the back said headaches so it was a bit confusing.

- Some of the wording was weird.
- I wasn't quite sure about this product, but I found the brown writing for the drug facts to lead me to believe it was fake.
- The color of the packaging seemed to be off. The font a little weird in a sense.
- Labels on the box.
- The Spain and New Jersey thing I don't know how else to word it.
- The pill is 81 mg. That seems like an odd amount for a pill.
- Very poor wording and strange directions. Writing in use sections inconsistent and ingredients all seemed very, very strange.
- The pill didn't look real
- The packaging looked legitimate but the dosing seemed quite extreme.
- I believe Bayer aspirin is a product of the US.
- Stated it was only for adult use, but in directions it had instructions for children and adults 12 and over, did not have year of copyright next to name, dosage seemed extremely high for an NSAID.
- The coloring seems off. I don't remember there being brown on the package. It also states "check with healthcare provider before taking this for your heart". I have never seen a product state a reason like that before.
- There was no counterfeit seal showing it could be genuine so I thought it was counterfeit. I also think it's counterfeit because the entire pill matched the weight of the active ingredient which is saying there's no fillers in it which I highly doubt.
- Packaging looks correct but product of Spain and had the company name as the product name.

Bayer™: Warning Added Genuine

- Warnings and directions look to be realistic
- The product looked like it could be genuine by the labels and colors
- Didn't see any typos and the warnings and drug facts looked genuine.
- Indented expiration date but the Bayer seal looks to be too simple, not very professional looking
- It all looks correct I believe
- oth of my grandparents have had strokes so they take baby aspirins daily. This look so exactly like the package they buy so to me it seems genuine
- Embossed text, everything looked fine to me.
- Clear graphics. Had lot number. Another n number on it
- Nothing looked suspicious, all looked normal with drug facts as well.
- High quality labels
- Had code engraved into box
- Packaging was bright and seemed familiar
- It seemed like the ones I have seen before in the store and nothing seemed counterfeit by my perception.

Bayer™: Warning Added Counterfeit

- Strange coloring and sizing of labels
- The dose is 81mg which most pills tend to round to the closest tenth and then for recommend amount it said don't exceed 48 pills a day which is more pills than other drugs
- There were many warnings on the bottle especially a big section about stomach bleeding so that is strange and makes me think it is counterfeit plus it said made in Spain and I've never seen that along with the possible counterfeit sticker.
- Something just seemed off about it
- Font seems 'off', line breaks of inactive ingredients seems odd, use of bold in warnings does not meet expectations, coloring 'off'
- The image for the pill doesn't seem right because it's cut open, but I also don't recognize the brand
- It said to not take this medicine in the last 3 months of pregnancy and continued to talk about how it will affect the fetus.
- Lettering didn't looking real
- The box didn't seem right with the product.
- Just looked pail and not well designed. Felt like I'd see something like it at junk type store
- No sticker nor QR code
- Severe stomach bleeding seems to be a red flag for a high level of toxicity in which it shouldn't be sold OTC.
- I just felt like it looked not as real. Maybe the color
- 81 mg tablets seems like an unordinary and very random amount of mg for a pain reliever. The box said it was a product of Spain but was made by a company in NJ.
- This product overall seemed real but I have never seen 81mg doses. Most doses are dosed by the 10's such as 10 mg, 20mg, 30mg, and etc
- The images looked too "cartoonish" - the red heart looked exactly like the one on some cereals I purchase.
- The wording on the back

Benadryl™: No Warning Added Genuine

- The labels looked real and the text all made sense
- The lot and expiration were well stamped into packaging
- Nothing weird about the package or writing on it. It also gave the proper warnings.
- Indented bin, brand name looked right, producers were real
- This product gave me no reason to suspect that it was counterfeit. It appeared to be legit
- There was a difference in box textures. I have seen other Benadryl packages and they looked like that. I wouldn't think otherwise.
- Looks exactly like it would at the store
- The packaging seemed familiar and the product picture looked correct
- I liked the colors and how the symptoms were clearly stated
- Main concern is the coloring and font on the package seem a little off. Does have a trademark on it to help believe that it is genuine.
- Just seemed more normal than the others
- The drug facts were where they should be

- The expiration date and lot number were imprinted on, but the main ingredient being from Japan was a little odd.
- Didn't notice anything off about the package
- "Active ingredient made in Japan" concerned. Side effects, uses, ingredient
- Imprinted packaging. Dosage seemed correct
- The company name
- It was trademarked, generally adds more legal weight to counterfeiting
- This product seemed familiar and the warnings and side effects all sounded legitimate. The dosing seemed appropriate.
- Different type of packaging, have never seen this product.
- Copyright and lot both present, logo seemed to look a bit different (could just be older design)
- Expiry date stamped on, looked familiar
- The box has different textures so it seems to be of higher quality. Also it tells the user to read the entire label before taking and to keep the box for more information. I feel as if counterfeit products would not tell you to keep the box.
- Looked similar to the Benadryl I've taken before.
- The front cover looked different than most Benadryl I'm used to taking or buying but I couldn't tell exactly why that was.

Benadryl™: No Warning Added Counterfeit
- The title
- I wasn't familiar with the packaging. I just went with my gut.
- The picture on the front didn't look right to me
- I have never seen liquid capsule Benadryl
- Color combination didn't look like it went together
- The warn to not use on children as a sleep aid seemed weird
- No hologram, wrong colors on package, and liquidgels seemed wrong
- Doesn't look like familiar packaging
- It seemed legit but there was no safety seal. The coloring on the box was also starting to flake off so I took that to mean it's a lower quality fake.
- On the front of the package it said liqui gels instead of liquid and product made in Japan and distributed by Johnson and Johnson

Benadryl™: Warning Added Genuine
- Little details and quality cardboard
- It was made by the Johnson and Johnson company (says on box)
- Packaging looked like other packages I have seen of this medicine
- Has indentation for expiration date, packaging looks clean
- It said distributed my Johnson and Johnson so I feel fairly confident it is genuine but again there was a possible counterfeit sticker
- The color looks right and the wording looks good
- Package looked sealed and products inside sounded good
- Have seen it before, looked identical to products seen in stores.

- It had embossed text, the packaging was glossy on the logo and matte elsewhere, it seemed real.
- It had the lot number again as well as an Ndc number
- Johnson and Johnson
- I don't know what the packaging usually looks like so I'm unsure and guessed
- Seemed like a normal Benadryl package to me.
- Proper labels and credit given also packaging quality
- It's distribution company
- Packaging felt familiar but no qr sticker
- I know Johnson and Johnson is a real pharmaceutical company. However, it said the active ingredients were made in Japan.
- The poison control number on the back was correct, the brand is also a reliable brand

Benadryl™: Warning Added Counterfeit
- I've never seen the top part of the box pink, even though it had Johnson and Johnson on the box
- There was a typo on the front of the box in spelling liquid.
- The package does not look like a normal Benadryl package. Something about the pictures and font made me think it is not real
- The image at the front doesn't seem right for the pill, everything is pink but that's yellow
- They gave specific instructions about how to not use it and one of the examples was to not use it "to make a child sleepy" which is odd wording.
- Colors threw me off
- Looking closer the next was misaligned and it looked just a little to dull color was
- Only listed one active ingredient
- Colors seemed a little less vibrant than real packaging. Also it said to not use to make a child sleepy, which seemed unprofessional.
- Although it says it's distribution was Johnson&johnson it states that it comes from another company called pharma. Inc which does not align right considering Johnson&johnson is it's own product manufacturer and distributor.
- Said active ingredient made in Japan

Tums™: No Warning Added Genuine
- Packaging, ingredients, look
- I am more familiar with tums and its packaging. It also had the safety steal with the logo which made me feel like it was the real deal.
- I have seen tums before and this seems to be real.
- Package had all the information you needed about taking tums and warning included.
- Labeling, ingredients and usage list.
- I've seen that packaging before and I believe it's right.
- Again this container seemed like a legit package for the mediation. It gave me no reason to think it was fake.
- It looks like ever other Tums bottle I have seen at the store or at my house.
- Familiar packaging and clear bottle allowing the actual product to be seen.
- Typical bottle shape and labels fit well

- The label font seemed to match and was similar with the writing on the inside product.
- I liked how it said it works in seconds and the flavor
- Tums on individual tablets.
- Had tums printed into the plastic.
- Drug facts, and tums logo
- The expiration date and the warnings.
- Had a recyclable stamp on the bottom. Don't think a counterfeit would take the time to add that.
- The drug facts.
- Package, uses, drug fact, warning for pregnancy women
- It looked like the tums I would buy at the store.
- Medication looked correct. Dosage was correct. Tamper seal intact.
- The label
- Recognizable and see through packaging allowed for more transparency in the product.
- It seemed like what I've seen before this product. The uses and doses seemed familiar.
- It looks legit though I haven't seen this version before it is consistently packaged with what I'm familiar with.
- Tums, several tsk, tamper resistant
- Copyright and lot number both present, design did not seem to look unfamiliar or off putting.
- The symptom of "sour stomach" seemed like a weird term but I don't take tums so maybe that's what they all say. The front logo was fuzzy but it seemed to just be a design element and didn't look super fake.
- Looks like every other tums packaging I've purchased. The shape and texture of the container is consistent with my past purchases and the same goes for the wording.
- Looks real and would use.
- Packaging seems like other bottles and had all the correct and needed information.
- Active ingredients, expiration date, directions for use

Tums™: No Warning Added Counterfeit

- The product was lacking were the active ingredient was made which was included on prior products. Also there was no security sticker.
- Colors seemed a little bright and welcoming. Had no other indicators to really look for.
- I think it's from the same place as the Bayer product. No website given only phone number.
- Directions should say take 1 to 2 tablets.
- There was no phone number for poison control. Even if the product is unlikely to result in an overdose, it seems like an important legal precaution for the company.

Tums™: Warning Added Genuine

- Looked genuine and had a lot of detailing
- The product labels looked normal and being able to see the stuff inside I can tell it could be real
- You could see the drugs inside the bottle and the drug facts were accurate.
- Raised recycle, looks like the real thing

- Name brand product that looks exactly like what I buy at the store. Still a possible counterfeit sticker but looks pretty real
- It looks correct, and it's got good coloring and words
- Bottle was see through and tablets inside had tums printed on them. Also the bottle was still sealed with what looked to be the original tums packaging
- Expected appearance and heft
- I do not purchase tums often, so I do not know what they normally look like. The tablets themselves had "Tums" printed on them so that seemed legitimate to me.
- Looks legit because of the packaging, harder plastic that has the recyclable symbol
- The tablets on the inside looked exactly like what you would buy in a store and the informational sticker looked normal.
- Familiar
- I don't use Tums, wouldn't purchase it for me personally.
- Well made bottle made me feel like I was holding a quality product.
- The package looked normal, but you can see the tums, so it should be fine
- Nothing seemed out of the ordinary
- Looks like the real deal
- The container looks very similar to the regular tums packaging.
- Seemed like normal tums that I would buy.
- Package quality
- Clear distribution
- Packaging felt familiar
- I feel like there should have been some sort of outer packaging around the top of the container on the outside. Other than that the product seemed to be pretty consistent with no major issues I could find
- Nothing on the package made me think it was counterfeit other than there is no trademark indication like the other packages. However, I would still be comfortable buying the product.
- It looks exactly like the tums I have at home. Also, on the bottom left corner it says that the tums are kosher and parve, which is what you would usually see on this kind of product if it has food coloring in it.
- Looks real

Tums™: Warning Added Counterfeit
- Everything on the bottles seems good but the color of the tablets seems too bright compared to other tums previously seen
- The label looks like an off-brand. It just doesn't look right
- I believe it's counterfeit because it said not to take more than 7 in a 24 hr period.
- This product looked legitimate but the manufacturer still says the same place in New Jersey.
- There was what seemed like genuine labels but overall the same manufacturer seems impossible to make multiple products that serve different purposes. Especially on a business scale.

Claritin™: No Warning Added, QR Code Genuine
- My mom has made me take this before and the packaging looked pretty reliable. The only thing I was unsure of was the liquid gel part.

- I believe I've seen this product before and it seemed to be the same.
- This product had one of the QR code stickers again and that makes me think it is counterfeit.
- It looked like every other Claritin box. As usually, there were indentions on the box which helped me think it was more genuine.
- Colors and font looked right. Texture on the box.
- Loved the colors and the shiny coat on the words.
- The packaging seemed legit. Nothing seemed out of the ordinary.
- Logo
- 3D packaging.
- Drug fact, uses, symptoms of use, warning
- It looked like the labels I see on tv
- Dosage was correct.
- The company name
- A trusted brand and logo, directions and ingredients also aligned with expected use.
- Box looked expensive.
- It seemed familiar and the dosage and warnings seemed legitimate.
- Again, the QR code on it was weird, but the shiny blue on the front of the package makes it seem more real.
- Again, the texture of the box make it seem more expensive so to me that seems genuine.
- Looks real and would use.
- The packaging looks like what's sold in the store and the company name on product.

Claritin™: No Warning Label, QR Code Counterfeit
- The packaging looked off and the security code was coming off.
- The glue holding the package together was odd for a medication. Also there was a random qr code glued to the box near the barcode.
- I'm not sure about this brand and it had little information about it.
- QR code, amount of capsules, stating thirty days for twenty four hours.
- That one also had a weird image on the front that I don't think I've seen before.
- The metallic letters made the package look a little different
- The texture of the box didn't seem right, and the coloring seemed different
- Some of the features were raised like it typically would be but there was a QR code that appeared to be glued on.
- The glued on QR code.
- The qr code was fake and the expiration date was also fake.
- Had a qr code sticker on it with not direction to why it's on there and one side of the box was just blank.
- The clear gels on an antihistamine seemed weird.
- No hologram and the package was wrong color. Qr code was not a genuine indicator.
- Sticker qr code, cantalent pharma group, NJ address.
- Claritin liquigels? Never seen have these either.
- Did not seem to have lot number written (maybe it did just did not explicitly state), also Bayer copyright seemed to differ from Aleve Bayer copyright.

- The sides of the box were very empty and the product didn't fit the box well. There was also no security seal.
- The opening on the container had a dried glob of glue which makes me think someone opened it and resealed it

Claritin™: Warning Label, QR Code Genuine

- Has all information on the box, nothing seemed unusual about the box itself
- Product looked normal
- It seemed real and there was no typos that I noticed.
- Seems very genuine and real only downfall is the possible counterfeit sticker
- I believe it's color looking, it has the right colors and wording
- As expected except QR code placement
- The blue skies with clouds see, like an actual common thing and the box seemed legit
- It gave instructions about if a reaction occurs and mentioned to see a doctor about different dosages.
- Very detailed
- Believe that's the actual product, box is appealing and reads toward its product with the imagery.
- Seemed on brand and reputable. Would definitely trust it and believe it to be real
- The lettering was raised and it looked correct.
- Cardboard seemed good. Qr code seemed a little fake
- The texture to the packaging looked real and the designs did as well
- Seemed like a normal package as well.
- Specific barcode
- Had a qr code to scan
- Everything seemed legit other than it said it was a product of Ireland, but all or most of the products made by Bayer were a product of a different country.
- It appeared to have a unique logo that some medicines have, a little suspicius of the scanner sticker on the back however

Claritin™: Warning Label Added, QR Counterfeit

- Box felt cheap and... thin? There were also no indents.
- Just felt off
- QR code looks fake/like a sticker
- Barcode sticker wasn't printed onto the packaging, otherwise looked authentic
- Didn't sound right and it looked like one of the ends was glued shut
- I take Claritin often for seasonal allergies and the packaging looks different than normal. I also did not see a lot of warnings on the label which normally there is .
- No sticker
- I feel like they've been around longer than @2015
- Weird Bayer logo
- Only thing that made me really think counterfeit was that the back just said Bayer at the bottom instead of Bayer inc or something like that. Otherwise it could possibly be genuine.

- The product had what looked like it was printed below the actual brand. Although it had warning labels, direction, and terms of use the manufacturing looked off stating it was manufactured in New Jersey which in most place that does not seem like a manufacturer state.
- Said recycle carton which I've never seen before

Mucinex™: No Warning Added, QR Genuine

- The cover as well as the back where it lists actives within.
- My athletic trainer has recommended this to me before. The packaging looks familiar. The image of what the pill looks like was convincing enough for me.
- I know the brand is real, but I do not believe the packaging is real based off the fact I have never seen it before.
- Like the Tylenol one, there were indentions by some of the writing leading me to believe it was real.
- The box also looked familiar and have used before.
- I liked how the number of hours was on the front of the box and not hidden.
- Real
- Looked like the real thing just the qr code sticker is throwing me off.
- Symptoms of use, side effect ingredient.
- Made in England. Unsure about medication dosage.
- Warnings and directions match what is usually seen on packages, clearly stated lot number, no odd looking typeface or color differentiation.
- The blurry QR code on it made me doubt it, but the silver on the packaging looks real and too hard to fake.
- The box seems to be of higher quality because of the detailing. It also listed other Mucinex products for different symptoms along with their website.

Mucinex™: No Warning Added, QR Counterfeit

- There was a random qr code glued to package.
- I've never heard of bi layer medicines and the packaging seemed weird.
- Extended and immediate release capsule two in one, its always one or the other for a controlled release, qr code.
- The bar code seemed fake as well as the expiration date.
- The product had a sticker on the back too. The stickers make me think that it's counterfeit.
- Box doesn't look like the right color or font.
- There was a QR code on the back that seemed to just be a sticker. The package also didn't seem right.
- I would like to believe that it is counterfeit due to the fact that it had the glued on QR code. The rest of the product seemed okay.
- QR code.
- It has the QR code again, and there was some weird lights when I moved it around.
- Packaging was odd. Expiration date and qr code were fake. The pills seemed to have been packed weirdly and I have never seen a package of 68 pills before.
- The box looks different.
- Lacking information might be because generic brand.

- The packaging looked different and the wording for some of the descriptions and warnings seemed odd.
- Looks like a fake because 68 capsules seems like a weird number. It seems generic in packaging which also makes it seem fake.
- NJ address same as another company.
- Box isn't what I have seen before. I use the product and it looks different.
- 68 tablets seems like a lot for cold medicine so I wouldn't trust it to be the actual product. The warnings list also seemed pretty short.
- Packaging color seemed off and so did some of the wording on the front. Company that produced product seemed weird.
- I have never heard of the active ingredient and the qr code was a sticker when usually it is printed on the box if there is one

Mucinex™: Warning Added QR Genuine

- Silver lining around logos
- Extra little details and designs like the serial numbers and metallic addings
- Product looked like other products
- The design seemed a bit off compared to most mucinex I've seen but it could just be a different box. Seemed real otherwise.
- The only reason I really doubted the product was because to me the dosage and the directions did not really seem right to me.
- It didn't have any oddities on the box or strange organization of the description of the medicine.
- Nothing looks out of place or strange
- Fancy feeling box with vibrant colors has me convinced it was genuine
- The box seemed real.
- It had a lot number which made it seem legit
- The shimmering look to the gray outline looked more professional and genuine
- Weirdly empty spaces on label/box
- It's distribution
- Had qr code
- Nothing on the package was unordinary. The trademark indication was next to Mucinex.
- Although the manufacturer seems off considering that this product stated it came from England but was made in New Jersey there was still citation of a website on the label.
- The packaging appeared to be real - specifically the shiny part of the logo. The health suggestions on the back also resemble other mucus relieve medicines I've taken before
- Wording

Mucinex™: Warning Added QR Counterfeit

- The use for the product used words like bothersome that doesn't tend to be put on a drug box
- QR code looks fake/like a sticker
- Barcode sticker isn't clear, lines are fuzzy so leads me to believe it's counterfeit
- It is a name brand so that makes it seem genuine but I feel like there should be more wording in the directions and information on the back so that seems more like counterfeit. I again saw the possible counterfeit sticker

- I don't believe it's the right color
- Not sure why just don't trust it
- Seems heavy, lots of medication for the expected price, large QR code
- I don't recognize it which could be my issue but way things are spelled doesn't seem right
- Have never used the product, not 100% positive what original product looks like.
- QR code, maybe
- I feel like guiefsenifen is either misspelled or not a real word
- Packaging was scratched up good. QR code on there for a second time as well.
- Something about the general packaging seemed a little different. It mentioned taking with a full glass of water, which isn't exactly necessary. Other ways things were worded seemed a bit off.

NyQuil™: No Warning Added, QR Genuine

- I have seen this product before and it seems to be the same.
- Packaged seemed legit and it had a safety protection on it.
- That one I've seen before and the labelling made sense.
- I was a little in between each. The box had markings like a real one would but the QR code looked different than I thought it should.
- Familiar packaging, p&g.
- Lots of fine print and warning and directions.
- The package branding seemed correct, and the information about dosage seemed to match what I know about Nyquil.
- The brand is good and colors were bright.
- Only real concern with the product was that there was a QR code glued to the box. Outside of that, everything seemed normal.
- Details on labels
- Canada.
- It looked mostly real, it's just I've never saw a qr code on the package like that.
- Drug fact, Doctor note, uses.
- Package was imprinted. Correct dosages.
- The box looks different but I believe the company name is correct.
- Trusted brand, labeling all seemed right including ingredients, things remained consistent side to side.
- Similarity to the Dayquil, the packaging seemed real.
- The tamper label
- The packaging looked authentic and had all the drug information and dosaging.

NyQuil™: No Warning Added, QR Counterfeit

- Packaging
- I usually purchase the liquid form of this medication. I feel like it's genuine but something about the box made me think otherwise.
- There was a random qr code.
- Qr code, capsules instead of liquid, stop teen abuse website.

- This package had one of those stickers on the bottom again so I think that my spinal that it is counterfeit.
- This all looked pretty good, but again with the glued on qr code.
- It just didn't seem authentic
- The package looks fake. It doesn't look like the ones they sell now.
- I didn't see a security sticker on the box.
- It seemed like really simple packaging and it just didn't seem familiar.
- No hologram, qr code is interesting but can be misleading. Color of package seemed wrong.
- Qr code, no security seal, no Nyquil.com, lots of company.coms
- Nothing noticeable, just a feeling that something was off. Don't use Nyquil.
- Speckled design in blue did not seem like something on genuine packaging, same with repeating text in background of text.
- The day quil had a silver seal on the bottom and this one had a QR code in that spot and it was kind of blurry which seemed weird.
- Nyquil doesn't work for me. Doesn't look like packaging I've seen either.
- It looks too bare bones to be genuine and in the poison control section it didn't list a phone number. It seemed like it was made by someone who didn't want to be contacted, unlike some of the other ones.
- The qr code at the bottom maybe.
- 3D on main package but not on top.
- The qr code was a sticker again so it seems fake but everything else seemed normal

NyQuil™: Warning Added, QR Genuine

- Texture
- Seemed to be genuine and couldn't find any flaws
- Everything on the box seems alright just the organization of some of the bullet points seems different compared to other boxes which
- Everything seemed normal on the packaging
- No typos that I noticed and the information was reliable on drugs facts.
- Everything on there seems genuine and I didn't notice any weird markings. Only downfall was the possible counterfeit sticker
- It 100 percent sure but seems legit and there was a note on the side about tampering and making sure the blisters were intact and they all looked to be
- I would buy this product. To me everything on the package looks normal. Especially due to the brand, I would not really think twice about buying something that is Nyquil brand
- The right color scheme and box seem to be on brand
- Looks familiar
- Believe that is the actual product.
- I believe it to be real, however felt and looked a bit cheaply made so I wouldn't buy it.
- It looked the same as the DayQuil, so maybe that's just how these boxes are made.
- Packaging look similar to other Nyquil products. It also had a shimmering look to it on the pill. The texture made me believe it is genuine
- Packaging seemed a little rough, but would probably still buy it anyways.
- Code from manufacturer present

- The packaging seemed of good quality plus had a qr code
- The box has the trademark indication next to the word NyQuil. I know NyQuil is made by Vicks.
- Packaging has that shiny pattern which I can't imagine someone would seen extra money to make the packaging look so realistic
- Looked genuine in terms of ingredients

NyQuil™: Warning Added, QR Counterfeit

- The QR code looks fake/like a sticker
- Barcode Sticker seems to have been placed onto packaging, seems to make more sense to just print it on in printing press. However the logo on the packaging was raised so makes me question its authenticity
- It's not the right color and the wording is off
- Orientation of side printing is inconsistent, specifically names 'Warfarin' without trademark/other symbol - would expect "blood thinner" or generic med name
- It said not to take it if you are taking prescription medication with the main ingredient in this product.
- It didn't give a distributor or where it was made
- QR code doesn't seem legit
- I feel as though directions for use would be printed on the back (not the side)
- Unfamiliar Nyquil packaging
- It said to be careful while operating machinery or driving which generally they would say to not drive etc. also it said it may cause excite ability in children which seems like not a medical way to describe something. Also I think the real packing has more written on the logo side, this one seemed a little more bare.
- There was no signs of manufacturer

Pepto Bismol™: No Warning Added, QR Genuine

- The overall directions and ingredients as well as the packaging.
- Seemed real and there was also a warning that if it was tampered with not to use.
- The packaging seemed real especially with the wear and tear.
- Familiar bright pink packaging.
- Expiration date on packaging looked very accurate.
- The logo and packaging seemed to be legit.
- I liked the color and seemed genuine
- Glued on QR. Outside of that I believe the product was the standard one.
- I believe this is the first one that came from Ohio. Could be wrong just all the other ones I think came from NJ.
- It was made in Mexico and had facts.
- It seems real but I wouldn't buy it because the qr code was fake.
- There were directions on the back.
- Side effects, uses, drug fact, symptoms of use.
- Package seemed correct. No imprint on pancake. Not 100% sure.
- The company name.

- Made in Mexico no hologram but could potentially be genuine from there. Not trusting of it because no hologram.
- I do not buy this product usually because the coloring doesn't sit right with me and it reminds me of liquid cotton candy, which I do not like. However, it seems to be genuine because of the list of symptoms it treats. I immediately sang the song in my head that they have in their commercials and it is the same order on the box.
- Looks real and would use.
- The order of things pepto bismol is meant to treat were in the correct order and it seemed genuine enough. The packaging also fit the product well.

Pepto Bismol™: No Warning Added, QR Counterfeit

- I haven't seen this product in capsule shaped form before, usually the tablets are more circular. The font of the product seemed off too.
- The only variation of this brand I know is in liquid form. Everything else seems genuine.
- Although the packaging was sound, there was a random qr code near the barcode.
- Brand name looked off, qr code, directions.
- The label on the top didn't seem to be a part of the original package but rather added after giving me the idea it may be counterfeit.
- Where the barcode was, the QR code looked off.
- Layout of box.
- The paper QR code, and the copyright sign being not clear and easy to see.
- There was a qr code sticker stuck to the outside of the package. Not sure if it normally would be there.
- Color may be off.
- It seemed to be lower quality of a box.
- Wording seemed very funky. Reliever is not a word typically used, upset stomach relief is more what I expected. Lack of knowing the distributor and not seeing information about bismuth in ingredients also made this seem suspicious.
- The dosing/timing seemed off.
- Qr code sticker, no security seal.
- Dosage limits seem excessive.
- Design seemed a little blurred on box, which typically (but not always) indicates a counterfeit product, no copyright year.
- The blurry QR code on it was weird, and the font didn't look like how I had remembered it.
- Packaging looked correct but company name seemed off.

Pepto Bismol™: Warning Added, QR Genuine

- Wasn't convinced until I saw the expiration date
- Nothing seemed to stand out that could be different on the packaging
- It looks correct
- The sticker was wrapped around one of the edges and it wasn't ripped so I would assume it wouldn't have been opened by that end for sure. Packing looked good tho
- I'm stuck because it looks correct but it feels off and I don't know why
- There was nothing strange about the box and the instruction sticker.
- Looked familiar

- Inviting and strong packaging made me feel like I was already feeling better and felt excited to take what was inside
- Nothing looked off or suspicious about the packaging
- Everything appeared authentic
- Looked similar to the regular packaging
- Packaging quality and manufacturer labels
- Clear source of production
- Scanner bar on the back looked real, looked like other products that I have purchased before, the packaging also looked "used" which may suggest a lot of handling

Pepto Bismol™: Warning Added, QR Counterfeit
- I've never seen pepto bismal as a pill form just liquid
- The QR code looks fake/like a sticker
- Didn't see a trademark logo anywhere on it.
- Product packaging looks somewhat childish, did not have expiration date or seal sticker
- It said made in Mexico so that makes me a little apprehensive to believe it is real. There was also a possible counterfeit sticker that made me nervous
- Font seems incorrect to branding, QR code placed in corner, text upside down when rotating box from branding side
- I would not purchase this product. I have only had pepto bismol in a liquid form, so that may be part of the reason I would not purchase the pills. It also looks like something I would purchase at the dollar store.
- not 100% positive, just didn't feel/look right
- There was nothing special about the box, but if any of these are counterfeit this one would be the easiest to fake
- QR code doesn't seem legit
- The packaging seemed upside down, box felt a little rugged as well.
- Packaging seemed subpar quality
- It said made in Mexico, which might be ok but seems a little sketchy. It said to use with overindulgence in food or drink, which might be true but seemed kind of like an unprofessional way to say it.
- The package said the product was made in Mexico. There was no trademark indication on the box.
- This product was manufactured in Mexico.
- Spelling error?

DayQuil™: No Warning Added, Holographic Security Genuine
- I know the brand and both the wording and packaging seem to be real.
- The packaging was very well intact, contained the metallic security sticker and where it was made.
- Legit packaging and wearing labels about product.
- Raised brand name and pill picture on box, directions stating not to take a certain amount, do not use if description.
- This package gave me no suspicion that it was counterfeit. It seemed realistic.

- It looked exactly like the NyQuil one just orange. It also had different writing which it should since it's a different product. I thought the NyQuil one was real so this one should be too.
- P&G and the security tag
- Texture on box.
- The coloring and fonts seemed familiar. The packaging itself also felt texture wise correct.
- Like the color and it's a good brand.
- The raised features on the product. The security seal on the box as well. Active and inactive items seemed correct.
- Manufacturer
- There was no glue visible and it looked very similar if not the same to the packaging I know is real.
- Nothing stood out to me. Couldn't tell if counterfeit or not
- I can't tell any more.
- Nothing seemed off about the product.
- Name, drug fact, ingredients, side effect
- It had a security sticker that made it seem real.
- Package was imprinted. Dosage was correct.
- The company name.
- Trusted brand that is easily recognized.
- Holographic seal seemed genuine.
- Vicks, P&G, tamper resistant info.
- The texture on the box where the pill is displayed seems like it is of higher quality which led, entourage believe it was genuine.
- The box seemed well made and the main active ingredient was highlighted like in the other acetaminophen product. There was also a safety seal.
- Security tag, expiration date, warning label.
- Security tag and strong box.
- Made in Canada, active and inactive ingredients, directions and warnings all seemed normal

DayQuil™: No Warning Added, Holographic Security Counterfeit
- The title looked off.
- There was security tag on the bottom that I don't normally notice on medicine.
- I've never seen that kind of packaging before and the shiny sticker.
- Packaging looked off and their information was weird. Made in Canada but distributed in Cincinnati.
- It doesn't look particularly familiar and I though[t] [DayQuil] had different ingredients.
- Directions for children use conflicting with 4 & 2 year olds?
- Very slight slivers of white behind main logo on front of box, same speckled coloration on NyQuil (maybe just new design I haven't seen?), no copyright year.
- I've seen these before and I don't remember them looking [th]at way but the raised texture on the front gave it some credibility
- Doesn't look real, DayQuil doesn't work on me.
- Packing seemed correct but color of the box seemed different from what's in stores.

DayQuil™: Warning Added, Holographic Security Genuine

- Holographic sticker
- There was genuine quality in the cardboard texture
- The lot number didn't have letters in it as well as nothing else on the box seemed out of order or place
- The logo was raised, packaging looked very professional, silver sticker of "approval"
- I saw a security sticker that made me feel it was safe and it looked exactly like the ones I buy look. But again there was a counterfeit sticker.
- It looks correct
- Box looked like one I've seen before and used, still had the sticker on it but I'm starting to think that's on every package
- There was a safe guard sticker on the product as well as plenty of warnings and directions. It also appeared similar to the packages at the store including color and font.
- It has the right scheme and the right logo, the box also looks like it would in a store
- Have seen before, believe it is the genuine product.
- Felt well made, look completely professional and would 100% trust it. Felt confident holding it.
- The letters were raised and that seems unlikely of a counterfei
- Sticker
- Looks authentic
- The look and texture of the print and the pill looked very professional and similar to what I would think of when looking at medication packaging. It also had a shimmer to it.
- A product I often use, didn't see anything that looked off to me.
- Product code was present
- Nothing seemed out of the ordinary and there was a silver sticker on the bottom that made it seem more genuine.
- It had the trademark indication next to DayQuil. Everything else looked genuine. However, I thought it was a little unordinary that the box said to use a scissors if it is hard to open and that is why I did not give it a perfect score.
- This product shows a credential website it also labels as legitimate with it's warning labels.
- I have used DayQuil before, and Vicks is also a reliable brand. The security seal on the back was also reassuring, and it had a website for parents to go to.

DayQuil™: Warning Added, Holographic Security Counterfeit

- It said to take no more than 8 caplets in 24 hours which doesn't add up with 2 caplets every 4 hours
- The product felt heavier than normal
- The liqui-caps wasn't hyphenated like it was on the other ones. And the trademark was missing in a few spots.
- Color and graphics seem off
- The bulletpoints about the uses were not correct placed and it gave a notice about going to the hospital right away even if symptoms aren't occurring yet.
- Colors are very bright and unrealistic from what I think I remember about this product
- This one had textures on the front that didn't align with the text, but I'm not sure if that means it's fake or just badly made?

- I've never seen DayQuil packaging like that
- No qr code
- Some of the wording

Robitussin™: No Warning Added, Holographic Security Genuine

- There was a metallic security sticker on the product.
- Seemed legit and was made by Pfizer
- It had drug facts and all other aspects of a medicine package so I'm guessing that it is real.
- The packaging seemed legit but the packaging itself is dull
- I liked how it showed the bottle and size of the bottle.
- Everything seemed okay. Looked for the security tag and double checked the information on the box.
- It gave more in depth information about who to contact about the product.
- The security seal and the expiration date were real
- Drug facts, uses, warning foe children and pregnant woman
- The security sticker
- Health warnings. Expiration dates labeled.
- The company name
- I'm not familiar with the brand however details like the distributor and ingredients seemed to check out as genuine
- It seemed to have valid information that sounded normal via the descriptions.
- Holographic seal, lot number, expiration date.
- Pfizer, .com listed, Cantent pharma group, security seal
- The silver security seal on the bottom gave it credibility.
- I don't use this product normally but it looks real.

Robitussin™: No Warning Added, Holographic Security Counterfeit

- Packaging.
- The shape of the bottle seemed off as well as the security tag on the bottom
- Label about teen overdoses, bin was not indented in the box.
- The packaging looked weird and the facts on the back looked off.
- The barcode looked different that the other containers.
- Has a "fake" look, sides looked weird where it was sealed.
- The safety seal on the bottom didn't appear to be doing anything. The box also didn't quite look or feel right.
- Double picture of the bottle.
- That's can't be their new packaging
- Lots of room inside for the bottle. Also advertised a "new look" not sure if that would be necessary for company to put that on the box.
- I wanna buy it since it says psfisr.
- Nothing noticeably tangible.
- Design seemed to look odd and maybe just a bit blurred, once again stated for adults, but has instructions for children and adults aged over 12

- I do not know if it is real because it is not a brand that I normally buy but the colors and images looked cheap and outdated.
- The box seemed too big for the bottle and the actual drug amounts weren't on the bottle graphics. I didn't trust it.
- Looks like the real product but packaging seemed off. Normally wouldn't have a picture of the bottle on the front and side of the box.
- Not completely sure one way or the other, more of a gut feeling from the packaging. The corners didn't lineup
- It said there was 20 pills but when I shook it felt like there was only a few pills inside.

Robitussin™: Warning Added, Holographic Security Genuine
- Looks to have realistic warnings and directions
- The trademarks were everywhere and no typos that I noticed.
- Silver sticker makes me believe it's authentic, looks professional
- I saw a security sticker that makes it feel genuine but yet again another possible counterfeit sticker that makes it seem not real. Packaging looked genuine
- I never actually used this product so I'm not sure what it normally looks like, but it says "new look" so it could be correct
- Again the packages looked genuine and contents inside sounded like pills but there was still the sticker saying it could be counterfeit
- Nothing looked counterfeit on the packaging
- Sticker
- Box seemed off par
- I did not notice anything out of the ordinary other than the warning sticker that it may be counterfeit, but the Aleve also had that sticker which makes me think they might all.
- "Pfizer" manufacturered and the labels looked legitimate.

Robitussin™: Warning Added, Holographic Security Counterfeit
- Looked either fake or generic with little to no detaling
- Had the spelling of liquid spelt wrong a few times, thought maybe could be genuine with it having Pfizer on the box
- I have never heard of this product so I probably wouldn't take it
- Color does not meet expectation, bottle design seems odd - screw cap appears on top and bottom, silver sticker perfectly aligned to box corner
- It seemed odd to only have 8 tablets per bottle. I also never purchase this product so i would consult someone before purchasing
- I again don't recognize the product and the title and spelling seems off
- They gave a drug abuse warning and they added a table which is not normally used when explaining dosages.
- Bottle size it size didn't make sense with size of box
- Don't think that's the actual box it comes in, but it is very appealing to the consumer.
- The "new look" phrase on the packaging and given it feels cheap a makes me feel as if it is counterfeit
- There was nothing special about the box, but it looked too plain?

- Where was the same bottle label on the side. It says "adult" on top and listed for ages older than 12. If it was truly marketed for adults then I feel as though it would pertain to higher age range than having the minimum set at teenagers.
- The look of the bottle on the packaging looked weird like it was very fake. I've also never heard of it so I would trust it less.
- Labeling and packaging seemed a little offer, and "cheesy".
- Low quality packaging
- No specific product code
- This one was tricky but I thought there was something weird about how it said this adult product is not intended for children 12 years of age or under. Because it could just say product instead of adult product. Or children who are 13 and older are not technically adults either.
- So,etching about the font and coloring of the package just makes it seem fake
- Style of box and wordage

Tylenol™: No Warning Added, Holographic Security Genuine

- The ingredients
- There was a metallic seal on packaging and the active ingredient was highlighted
- The word Tylenol was bubbled up as if it were a real one.
- Familiar red packaging, large product name
- I liked how there was a phone number to call if there was problems
- Mostly believed it was genuine because of how the packaging had the security tag. A concern was that there were numbers to call that were not 1-800 but 877 or 217
- The perforations in the cardboard to open the package seems hard to fake.
- It had the actual drug name.
- Looked like a normal Tylenol box to me.
- Drug fact, uses, company that made this product.
- The company name
- It looked very familiar. The dosage and ties seemed to line up with what I remember.
- Holographic seal, lot number and expiration date, package appears the same as what I have seen before.
- .com address in PA johnson&johnson, not to many Tylenol, security seal
- The perforations on the side made it seem real and had a silver security tag on it as well which helped. Looked familiar.
- It looks like every other Tylenol package I have seen that come in a box. Usually the box is smaller and comes in individual servings, or just the bottle, but I would think it was just another package form.
- Looks real. Not a Tylenol fan.
- I wasn't completely sure but based on the fact that the help center number takes the place of one side of the packaging, I think it's genuine, but it could honestly just be a very good fake.
- The drug information and the company that makes the product and contact information on the company. Also the coloring of the package.
- Nothing on the box gave me an indication that something was wrong with the product
- Warnings, ingredients, toll-free number

Tylenol™: No Warning Added, Holographic Security Counterfeit

- The labeling on the package seemed off. There were black areas and I don't recall ever seeing a phone number that big on their boxes.
- Packaging seemed a bit suspicious. Temperature range was very abnormal.
- The package didn't seem right and the "actual size" of the pills seemed huge fir Tylenol
- One side of box mostly empty, font changes on directions and use, specified only for adults but no reason like arthritis.
- It seemed weird with the phone number on the side.
- This product also had a sticker however the sticker seemed to be more real then the other ones. I thill think the sticker means counterfeit though.
- Sides of packaging did not look like it matched up
- I have never seen a Tylenol package that puts Tylenol 500 on the picture of the pill on the outside. The packaging itself also didn't seem familiar.
- How can we help side
- Toll free and collect through me off. That hasn't been on any other packaging. Even the other Johnson and Johnson product.
- The shiny seal wasn't in English and I thought that was weird.
- The how can we help number is usually smaller on the box.
- Ingredients were strange. Might be ignorance as to proper composition but corn starch stood out as off.
- Instructions for daily dosage…math doesn't add
- Logo looked offputting, again stated for adults with instructions for children and adults over 12 (could just be something written on all packages that I never noticed), "contains no aspirin" only stated on one side of box.
- The ingredients were weird. It had very odd wording on the packaging that didn't seem normal

Tylenol™: Warning Added, Holographic Security Genuine

- Box felt kinda cheap, but had perforations, so I was unsure.
- The packaging looked familiar
- It looked real and the drugs facts were real. Didn't notice anything out of the ordinary no typos.
- One side of the packaging looked a little blank but I felt reassured that the silver sticker was present
- Everything seemed normal and there was a security sticker the only thing that made it possibly seem counterfeit was the font on the warnings and directions seemed a little off but I could be wrong
- No tampering with the product package and pills in the bottle sounded like it should
- This product had several things on it that made me feel like it was a safe product to purchase. It had a safeguard sticker and pull tabs on both ends to ensure it was safe. It also said it was distributed by Johnsonand Johnson, which to me is a trustworthy company
- It looked like a normal box that you see in stores and there was nothing that stood out making it seem fake.
- I do use this particular item when necessary.
- This one seemed real, it had raised text and all the info I have been looking for.

- Good packaging. Nothing suspicious
- Sticker
- It looked like a normal box of Tylenol
- Branding and manufacturer on label
- Most of it seemed real. The only questionable part seemed to be the backside with the large phone number, which I would have expected to see the logo again.
- Nothing made me think it was counterfeit. Everything seemed legit.
- Well labeled with contact information as well as distributed from Johnson&johnson
- The product says it's made from J&J, and they are a well known medicine brand.

Tylenol™: Warning Added, Holographic Security Counterfeit
- Everything looks correct, except the phone number on the side
- Font seems off, color seems off, sticker made me feel more like it was real
- I don't think it normally has a silver sticker, also I thought it has a yellow line in the front
- Lettering is very big
- If I needed it I would take it, it looks real enough. However it looked and felt cheap so I don't think it's real and nor would I buy it
- The packaging looks a little bland and not like the normal packaging. The look of the pill also seems a little weird.
- Something seemed off with the look of the packaging compared to what I have seen in the past. Could be overthinking it though.
- Specific things were missing
- The packaging just felt fake
- Wording on back

Zyrtec™: No Warning Added, Holographic Security Genuine
- The paper cover on the back looked genuine and had the right information.
- There was a metallic security sticker on the packaging. The package did not feel well secured together.
- Product look familiar and you can see the actual bottle.
- Loved how you can see the bottle perfectly.
- The standard security tag was on it. It looked how it typically would in the plastic packaging.
- Everything seemed legit. The drug facts and the security seal seemed real.
- Everything seemed right, just had a weird packaging I've never seen used on medication.
- Name ingredients, Uses, doctor recommends
- The extra 33% seemed off.
- Correct dosage
- The company name
- Ingredients remained consistent and lined up with other packaging information, copyright and company also looked right.
- 33 percent more
- I think this looked legitimate and the dosing sounded right
- Johnson & Johnson, blister packaging

- The phone numbers on the packaging and the actual bottle matched. While the actual graphic looked a bit different than I'm used to, I think it was genuine.
- The drug information on the back but the front of the package seemed off.
- It looked normal except that a previous barcode or price sticker has been removed

Zyrtec™: No Warning Added, Holographic Security Counterfeit

- The label was off centered. The top of the product said 33% more and I don't think I have ever seen that on another medicine before.
- I believe the brand and product inside is real, but not the packaging. None of the wording threw me off it was mostly due to the empty plastic space and lack of security.
- The package did not seem secure and there wasn't much about the product.
- Packaging clear and not a box, thirty three number, math, brand looks wrong, warning on back to read all information.
- I don't think I've ever seen the bottle come in another package and on the back it said ask doctor for everything.
- I used to take this for my allergies and the way I remember the package was different; however, they may have changed their packaging since I took it.
- The lot number and expiration date looked different than what I thought it should.
- Plastic on the outside looked off…bottle didn't fit well it in.
- The product packaging just didn't seem right. The colors didn't quite match and the package itself was flimsy
- I use Zyrtec and that is not the same packaging.
- The more I see reoccurring things on the packaging I'm less likely to know if I believe it's counterfeit or not.
- Definitely fake, i.e. 33% more bonus.
- The blister pack is not genuine despite holographic seal and matching lot numbers. No hanging spot which suggests it's not genuine.
- Copyright date on back of product did not match copyright date of bottle (maybe was older design).
- It looks like it would be easy to open and counterfeit. Never seen it before in a store or anything.
- I. It iced that the packaging looked very different from other Zyrtec that I've seen in the past. I do not remember the plastic packaging and the colors seem off.
- The packaging looks fake but I like the product.

Zyrtec™: Warning Added, Holographic Security Genuine

- Very detailed and lots of eye catching sayings
- The back said that it was under trademark protection
- Couldn't notice anything that was different about the packaging
- Trademarks were everywhere. The information was consistent on the packaging.
- Silver seal sticker. Draws my attention to it and makes me think it would be authentic
- I saw a security sticker and that it was distributed by Johnson & Johnson so that makes it seems a lot of genuine having a name brand on there. I also saw the possible counterfeit sticker which makes me give it not a full rating

- Although the package is indent it's not and it's hard to replace plastic like that is someone were to tamper with it
- Coloring and dual packaging as expected, silver sticker size and alignment seems out of place, wording placing "Zyrtec" in quotes for info printed on seal seems odd
- The plastic over the bottle and the actual size picture seem to be legitimate
- Nothing seems unusual
- The back seemed a little loose but the package seemed correct?
- Seemed legit. Nothing suspicious about the packaging
- Sticker
- Appeared authentic
- It stated its distribution company, which was well-known
- Packaging had quality
- The packaging seems pretty unordinary and it is trying to advertise a bonus amount aggressively. However, the back said everything on the package is protected by trademark.
- Labeled as a product from Johnson&johnson
- Packaging

Zyrtec™: Warning Added, Holographic Security Counterfeit
- Most things encased in plastic including the instructions normally are as well
- For the most part everything looks right, but there's something wrong
- The advertising on the package seemed fake. Advertising more product for the same price and the font seemed over exaggerated.
- It said to be extra careful when driving a vehicle when taking this medicine.
- Don't believe the packaging to be associated with the actual product
- Felt extremely cheap and untrustworthy. Looked very much like something that would be made as a counterfeit
- I think that the red part behind the Zyrtec words looked weird and a little off.
- The packaging was not good
- Packaging looked ba, and a 33% bonus doesn't seem like something a company would do.
- Low quality packaging
- Most of liquid t seemed real except the extra 10 free tablets and the extra plastic packaging on the front beside the bottle seemed off. I think of the 33% more free to be something for chips not medication. Just looked more unprofessional for a medical item.
- While it does look very realistic, he plastic packaging just seems incorrect