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Retention Fastener Preference for Fisher-Price Toy Packaging

By

Lakeshia P. Haynes

Thesis

Submitted to the

Department of Packaging Science

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In partial fulfillment of the requirements for the degree of

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2010

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CERTIFICATE OF APPROVAL

M.S. DEGREE THESIS

The M.S. degree thesis of Lakeshia Haynes
has been examined and approved
by the thesis committee as satisfactory
for the requirements for the
Master of Science Degree

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November, 15, 2010

Dedication

This thesis is dedicated to my family, friends, and those who have encouraged and supported me throughout this journey. You have been a source of motivation and inspiration to me in so many ways...

Thank - You

Retention Fastener Preference for Fisher-Price Toy Packaging

By

Lakeshia Haynes

Abstract

“Wrap Rage” continues to be a growing phenomenon as consumers become increasingly frustrated with toy packaging. Consumers have become dissatisfied with the amount of time and effort it takes to remove product from its packaging. To better meet the needs of consumers, toy company Fisher-Price has implemented several improved consumer-friendly package fastener alternatives. The purpose of this study was to test the three most favorable alternative package fastener concepts executed by Fisher-Price. Interviews were conducted to evaluate the amount of time and effort associated with each fastener and to determine which concept was most preferred. The findings of this study indicated that the most highly preferred method was the key-lock fastener. The paper-string fastener (with corrugated backer) was the 2nd preferred and the improved wire-tie fastener (with plastic backer) was the least preferred alternative method. Overall, the majority of the participants interviewed felt that package samples containing any of the three alternative concepts tested were easy to open and involved less time and effort than previous toy fastener methods used.

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Introduction

Consumer-packaged goods (CPG) have changed over the decades. During the early years, goods were packaged primarily in closed boxes. Within the toy industry, the majority of the toys manufactured during the middle of the 20th century were packaged in simple corrugated and solid fiber boxes with minimal print. Actual product images were absent from the printed package graphics. In an article, “Toy Packaging Then and Now”, Stephen Clifton stated that “Photography was rarely used on toy boxes, so the whole experience was akin to unwrapping a Christmas present. You were looking at artwork but you weren’t quite sure what was inside” (Hall, n.d.).

Unlike the 1950s, the majority of today’s toys are packaged within elaborate open-display structures. The advancements made during the 1980s have led us to the modern day state of the art try-me packaging (Hall, n.d.). This trend has greatly impacted the direction of toy packaging for many toy manufacturers. This style of packaging allows for greater visibility of a product at retail and an opportunity for consumers to see, feel, and interact with the product via “try-me” (try before you buy) sampling before making a purchase.

Literature Review

According to trade publication, Packaging Digest (2009), the United States demand for high visibility packaged goods is expected to increase annually at 4 percent to \$8.5 billion in 2012. Some of the factors that have influenced the movement towards highly-visible (open-display and try-me) toy packaging are:

1. Innovation & Technological Advancements

Toys have entertained both children and adults for decades and have advanced alongside

the progressions of society and technology. Through continued innovation, and to remain competitive, toy companies utilize advancements in technology, allowing them to produce toys that are more complex and offer more features compared to those of traditional toys. Toys of today (e.g., dolls) have the capability to recognize or identify objects and voices and have a wide variety of pre-programmed phrases (Van Patton, n.d.). Current open-display toy packaging offers the high visibility necessary to view the magic designed into modern toys.

"Innovation is key in the toy industry and to succeed one must create a 'wow' moment for kids by designing toys that have fun, innovative features and include new technologies and engaging content" (Neil Friedman, president of Mattel Brands Division).

2. Shifts in Marketing Strategy

Packaging has become a vital component to the marketing strategy of consumer goods. The packaging helps to differentiate the product among other competitive items. As companies began to recognize the importance of branding, they realized that packaging was capable of performing beyond its primary functions to contain, protect, and store. "In marketing and market development, packaging is the 'dress' on the product, which can play a role in whether the product sells in a new market or to new consumers" (Lorette, n.d.). Businesses discovered that packaging was the "non-verbal salesperson" that, if done effectively, can break through all of the noise and sell itself to the customer. "This silent voice of package design, essentially a promotion of the 'tradedress' of the package, may become a significant asset for market entrenchment and product valuation" ("The legal aspects," 2008). Many of today's products are "showcased" within open-display packages to help draw the attention of consumers.

3. Growth of savvy consumers

Consumers have grown to become more selective and expect to know the value of a

product before bringing it home. This type of shopping behavior has influenced companies to connect with consumers differently than before. Most toy shoppers claim to read the copy printed on the package; however, it is only a moderate influence in the purchasing decision (Fisher-Price shopping behavior study, 2004). Consumers find it helpful to see what the product is and interact with the item before they buy it. Consumers prefer open-display package structures, such as those containing “try-me” features, which are useful in the decision making process. This allows consumers to determine product quality, value, scale, features and appropriateness (Fisher-Price shopper behavior study, 2008).

Toy packaging engineer objectives

In keeping up with the demands of modern day toy packaging, packaging engineers work strategically and creatively to balance three primary objectives:

1. Attract consumers with packages that optimally display product.
2. Ensure that the package remains intact during transit. The majority of toys sold in the United States are made in China due to cheaper labor costs. Package design has to be adequately engineered to endure lengthy transit from overseas manufacturing plants.
3. Design packages that deter tampering and pilferage at retail. The National Association for Shoplifting (NAS) estimates \$13 billion in losses each year (approximately more than \$35 million per day) from the pilferage of goods.

In fulfilling the aforementioned objectives, package engineers use several retention fastener methods to effectively showcase and secure toy items within a package. Some of the most common methods used are wire-ties (also known as twist-tie), cabal or ladder ties, blisters or thermoform trays, and clamshell packaging.

Problem

Wrap rage (also called *package rage* or *wrapping rage*), is the common name for extreme anger and frustration resulting from product packaging that is difficult to open (WordSpy, n.d.).

Although toy makers have satisfied the demands of providing open-display and try-me toy packaging at retail, consumers have become increasingly dissatisfied with the way toys are secured in the package. Consumers experience “Wrap Rage” and become frustrated with the amount of time and effort it takes to open a package and release its contents. A *Yours* magazine survey found that 99 percent of the 2,000 participants surveyed said that packaging had become harder to open over the last 10 years (“Wrap Rage”, n.d.).

Wrap rage not only triggers tempered emotions, but also leads to unintended safety hazards. Some consumers suffer from injuries sustained while attempting to extract a product from its packaging. They become injured from the sharp edges of the package or from the ends of retention fasteners, such as wire-ties, when they are cut to extract a toy from a package. Consumers also hurt themselves from the tools they often use (e.g., scissors, knives, razors, tools, etc.) to open a package. The U.S. Census Bureau has reported that there are twice as many injuries related to opening packaging (household packaging) than from accidents on skateboards or in swimming pools (Millman, 2009). Some injuries are so severe that they require medical attention. The U.S. Consumer Product Safety Commission asserted that injuries from trying to open plastic packaging resulted in approximately 6,000 visits to the emergency room in 2006. The Center for Disease Control claims that during the holidays, opening gifts is the fifth common cause of non-fatal injury in America (Mantell, 2010).

"I've worked in the emergency department on Christmas day for six out of the last 10 years. We certainly see lacerations. That's the most common thing. But we also see punctures,"
(Dr. David Ross, emergency physician, quoted in Elliott, 2008)

Toy companies Fisher-Price (subsidiary of Mattel) and Mattel have received specific complaints from consumers stating that their products are difficult to remove from the package. Some of the consumers have become injured and/or suffered from pain when trying to remove the product from the package. Table 1 lists some of the complaints expressed by consumers of Fisher-Price and Mattel products:

Table 1.
Fisher-Price/Mattel consumer complaints

| Consumer Complaints and Dislikes |
|--|
| Consumer stated that it took over 30 minutes to take everything out of the package. |
| Consumer stated that on Christmas day, when attempting to remove the toys from the package, she cut her finger and broke a fingernail on both hands. |
| Consumer states that there are too many twist-ties (wire-ties), making it difficult to remove the product. |
| Consumers dislike when there are more than three wire-ties used in a package. |
| Consumer stated that after cutting the package open she injured herself, cutting her hand and knuckles on the package. |

The liabilities associated with wrap rage have encouraged some companies to take action by improving existing fastening methods and developing alternative concepts to make packages more consumer-friendly and eliminate the risk of potential injury. In response to the complaints received, Fisher-Price and Mattel have taken steps to evaluate their methods of retaining their products in the package. New concepts have been developed and implemented, allowing consumers to easily and safely remove the product from its packaging. An example of this is how Mattel “Freed (Barbie) From her Shackles”. The doll was previously tethered to the package using 14”-16” of wire-tie. Package engineers revisited this method and introduced the use of plastic staples, thread, low tack glue, and internal die cuts to hold her in place (Walker, 2007). To date Fisher-Price has eliminated 64 million wire-ties from toy packaging, equivalent to a reduction of over 8,000 miles or 512,060,800 inches of wire-tie.

Another step taken by both Fisher-Price and Mattel is the partnership with online retail company, Amazon, to address difficult to open packaging. The e-commerce company has developed a program to provide “frustration-free” packaging for 19 of its best selling products from manufacturers such as Fisher-Price, Mattel, Microsoft, and Transcend. The program is designed to eliminate the use of retention fasteners (Figure 2) by making products available in closed box recyclable kraft (board) corrugated containers (Slattery, 2009). It was estimated that the frustration-free package version of the Fisher-Price Imaginext Adventures Pirate Ship (Figure 1) took only 44 seconds to open, while the traditional open-display package version (Figure 1) was estimated at 11 minutes and two seconds (Elliott, 2008).



Figure 1. Fisher-Price Imaginext Adventures Pirate Ship: Amazon’s “frustration-free” package (left); Traditional retail open-display package (right). (Source: Amazon.com)

One of the first products to launch with Frustration-Free Packaging is the [Fisher-Price Imaginext Adventures Pirate Ship](#), which is now delivered in an easy-to-open, recyclable cardboard box.



Figure 2. Components eliminated from the Fisher-Price Imaginext Adventures Pirate Ship traditional retail open-display package. (Source: Amazon.com)

Table 2 lists several additional improvements and alternative methods implemented by Fisher-Price and Mattel to better meet the needs of consumers.

Table 2.
Fisher-Price/Mattel alternative retention fastener methods

| Alternative Fastener Methods |
|---|
| Improved wire-tie method (minimal use of wire-ties, elimination of twisted and taped ends, use of plastic cleat backer via “figure-8” unwinding motion) |
| Paper-string fastener |
| Elastic bands |
| Low tack glue |
| Sewing operations |
| Flexible straps |
| Plugs |
| Increased use of die and blister undercut |

Purpose

The purpose of this thesis is to test the new and improved package retention fastener concepts made by toy company Fisher-Price. Three of Fisher-Price's most favorable package retention fastener alternatives: (1) Key-lock fastener (2) Paper-string fastener with corrugated backer and (3) Improved Wire-tie method with plastic backer, will be evaluated and tested to determine the overall ease of use of each fastener and to determine which method is "most" preferred. This effort will assist Fisher-Price with further development of improved consumer-friendly packaging and help the company to assess the most effective fasteners used to secure toys in open-display/try-me packaging to better meet the needs of consumers.

Methodology

One-on-one interviews were conducted with 28 participants to identify preference and "ease" of alternative fastening methods. The study was aimed at consumers/mothers of children between the ages of 0-7 years old. Each participant was asked to open three different packages. Each of the three packages consisted of one type of favorable alternative fastening method listed below (Figures 3-9):

1. Key-lock fastener: spring loaded molded plastic component, released by turning the part 90°)
2. Paper-string fastener (with corrugated backer)
3. Wire-tie: improved method using no more than three ties per package, plastic backer, and "figure-8" unwinding motion for release)

Note: Toy packaging using the previous wire-tie methods often involved excessive amounts of wire- ties that were twisted several times on the ends and taped down to the package.

Participants were asked to express their views, thoughts, and feelings as they opened each package. Observations were made during the study to determine the overall likes, dislikes, and setbacks of liberating product from the package. Participants were asked to rate each package and were asked follow-up questions relating to each of the three packages.

The anticipated outcome of this study was that, although consumers appreciate all of the concepts as favorable, the “most” favorable fastening method would be the key-lock fastener, followed by a tie between the paper-string and improved wire-tie method as the next favorably preferred fastening method.

Key-lock Fastener & Package Sample



Figure 3. Key-lock underside (left) and top side (right).



Figure 4. Key-lock package sample: Front of package (left); back of package - exposing key-lock fasteners (right).

Paper-string Fastener (with corrugated backer) & Package Sample

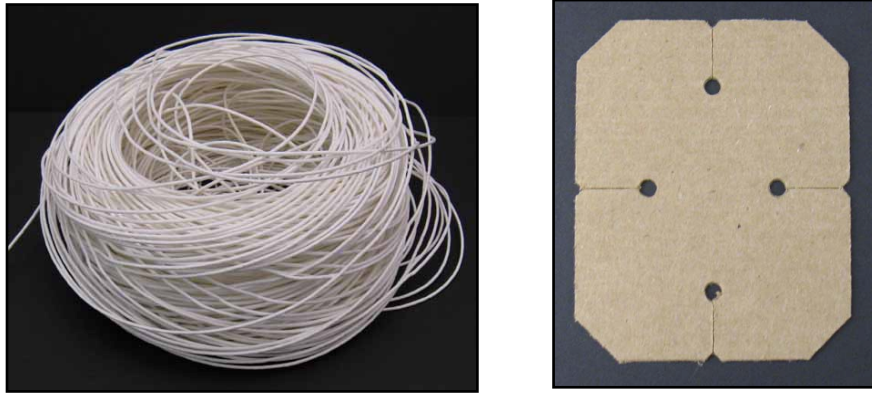


Figure 5. Paper-string bulk roll (left); corrugated backer (right).



Figure 6. Paper-string package sample: Front of package (left); back of package - exposing paper-string fasteners (right).

Wire-tie Fastener – Improved Method (with plastic backer) & Package Sample

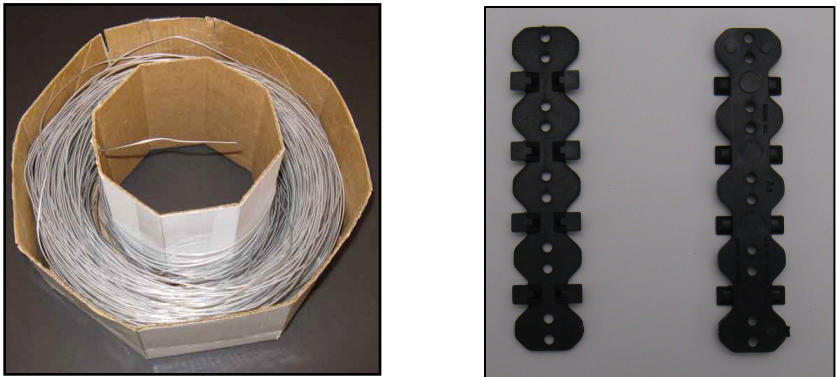


Figure 7. Wire-tie bulk roll (left); plastic backers (right).



Figure 8. Wire-tie package sample: Front of package (left); back of package - exposing wire-tie fasteners (right).

Previous Wire-Tie Method



Figure 9. Previous wire-tie method with ends twisted several times.

Interview Survey Questions

Package #1: Product Name _____ Product # _____

Fastening Method:

- Key-lock Paper-string w/ corrugated backer Wire-tie (improved) w/ plastic backer

Consumer/Mother Comments:

Observations:

Questions:

1. Do you think that the package was?
 - a. Very easy to open
 - b. Somewhat easy to open
 - c. Somewhat difficult & frustrating to open
 - d. Very difficult & frustrating to open

Please explain why _____

2. Would your answer change if you had a larger package to open, meaning more of this type of fastener to undo? _____

Please explain why _____

3. How long do you think it took you to open the package? _____
Actual Time Recorded _____

4. What do you think would have made this process easier? _____

Please explain why _____

Package # 2: Product Name _____ Product # _____

Fastening Method:

- Key-lock Paper-string w/ corrugated backer Wire-tie (improved) w/ plastic backer

Consumer/Mother Comments:

Observations:

Questions:

1. Do you think that the package was?
 - a. Very easy to open
 - b. Somewhat easy to open
 - c. Somewhat difficult & frustrating to open
 - d. Very difficult & frustrating to open

Please explain why _____

2. Would your answer change if you had a larger package to open, meaning more of this type of fastener to undo? _____

Please explain why _____

3. How long do you think it took you to open the package? _____
Actual Time Recorded _____

4. What do you think would have made this process easier? _____

Please explain why _____

Package # 3: Product Name _____ Product # _____

Fastening Method:

- Key-lock Paper-string w/ corrugated backer Wire-tie (improved) w/ plastic backer

Consumer/Mother Comments:

Observations:

Questions:

1. Do you think that the package was?
a. Very easy to open c. Somewhat difficult & frustrating to open
b. Somewhat easy to open d. Very difficult & frustrating to open

Please explain why _____

2. Would your answer change if you had a larger package to open, meaning more of this type of fastener to undo? _____

Please explain why _____

3. How long do you think it took you to open the package? _____
Actual Time Recorded _____

4. What do you think would have made this process easier? _____

Please explain why _____

Questions asked after opening all 3 types of packages:

1. What is your *preferred* choice of fastener; based on this exercise? _____

Please explain why:

2. Would your answer for question #1 change (your preferred choice) if you had a larger package to open, meaning more of this type of fastener to undo?

Please explain why:

3. What is your *2nd preferred* choice of fastener; based on this exercise _____

Please explain why:

4. What is your *least preferred* choice of fastener; based on this exercise? _____

Please explain

Discussion/Summary of Results

The interpretation of the data collected shows that each concept was easy to unfasten. Overall, of the three favorable alternative fasteners tested, the *preferred* fastener of choice was the Key-lock fastener. The 2nd *preferred* fastener was the Paper-string fastener followed by the improved Wire-tie method as the *least preferred* fastener. See Tables 3-5 and Figures 1 and 2 for detailed outcomes.

Most Preferred Method: Key-lock fastener

As expected, evident observations show that the majority (75 percent) of the participants interviewed preferred the key-lock fastener as the “most preferred” method. Overall ratings show that 89 percent of the participants felt that this method was very easy to unfasten.

Aspects contributing to the outcome of the key-lock method include overall likes:

1. Minimal time and effort required to unfasten and remove.
 - a. The average time taken to open the package sample and remove product using this process 31.72 seconds (Table 5). This method was recorded as the “quickest and easiest” of the three methods tested.
 - b. Participants appreciated the fact that there was only one simple step (90° turn) to remove the fastener
2. The majority of the participants interviewed commented that they would not experience any frustration if they were faced with a package that included a numerous amount of key-lock fasteners to undo (e.g., holidays or birthdays).
3. Participants liked that there were no residual parts left behind after unfastening this method.
4. The molded arrow imprinted on the key-lock gave direction on how to undo the fastener.
5. This type of fastener can become undone without the use of a tool.

A small portion of the participants expressed frustration/concern involving this method where they perceived the fastener as a potential choking hazard if acquired by small children.

NOTE: This fastener has been tested and complies with small part and safety abuse requirements. Few participants felt that at first glance this method was not clear on how to unfasten and that the molded arrow imprinted on the key-lock (directing which way to turn for removal) was not visible enough.

2nd Preferred Method: Paper-string fastener with corrugated backer

46 percent of the participants chose the paper-string fastener (with corrugated cleat backer) as the 2nd preferred method. The wire-tie fastener was observed at 43 percent; resembling a close trail to the paper-string. Overall ratings show that 53 percent of the participants felt that the paper-string method was very easy to unfasten.

Aspects contributing to the outcome of the paper-string method include the following overall likes:

1. Minimal time and effort required to unfasten and remove.
 - a. The average time taken to open the package sample and remove product using this process was 54.92 seconds (Table 5).
 - b. The paper string was least likely to get tangled within the toy upon removal.
2. Flexibility of the paper-string material made it easy to manipulate and was easy on the hands during handling.
3. This type of fastener can become undone without the use of a tool.
4. No plastic parts left behind. Some consumers perceived plastic fastener parts as a potential choking hazard if acquired by a small child.
5. Eco-friendly: the paper-string and corrugated backer material used with this process can be easily recycled.

It was observed that the removal of this fastener method was initially inexplicable, thus creating a perception that this method took more time and effort than it actually required. There

was also a sense of ambiguity involved with the corrugated backer where participants were unsure if the backer component needed to be manipulated (or not) to unfasten the string.

Least Preferred Method: Improved Wire-tie fastener with plastic backer

Against my expectations, 57 percent of the participants chose the improved wire-tie fastener method as the least preferred method. In general, participants appreciated the improvements incorporated into this concept compared to the previous wire-tie method used in production. Overall ratings show that 43 percent of the participants rated this method as very easy.

Aspects contributing to the outcome the improved wire-tie method include the following overall likes:

1. Easy to undo, but not as easy as the key-lock or paper-string fastener.
2. Wire-tie kinks up within package or toy upon removal.
 - a. Can make the package somewhat difficult to open - time consuming.
3. In spite of of the ease of this process, many participants commented that they would experience some type of frustration if they were faced with a package containing more than 2-3 wire-ties. Participants also stated that it would be undesirable if faced with multiple packages using this method (e.g., holidays or birthdays).

Overall, this concept was not as frustrating to unfasten as participants initially perceived it to be. Although this process had the longest average time recorded (1.67 minutes) to open the package sample using this method (Table 5) this concept had an overall rating of easy to open, especially when compared the previous wire-tie method.

Despite the fact of the last place rating for this method, participants appreciated the following features associated with this process:

1. The process (unwinding the wire-tie around the plastic cleat, “figure-8” pattern) was fairly easy and intuitive.
2. This method can become undone without the use of a tool.

3. This concept did not involve multiple twists at the ends of the wire-tie.
4. The wire-tie ends were not taped down to the package.
5. Excessive amounts of wire-tie were not used; samples used two ties to secure the product.

Table 3.
Overall Fastener Preference Outcome

| Consumer Preference | Alternative Fastener Method | | |
|---------------------------|-----------------------------|--------------|----------------------------|
| | Key-lock | Paper-string | Wire-tie (improved method) |
| Most Preferred | 75% | 25% | 0% |
| 2 nd Preferred | 11% | 46% | 43% |
| Least Preferred | 14% | 29% | 57% |

Table 4.
Overall Fastener Rating

| Fastener Rating | Alternative Fastener Method | | |
|----------------------------------|-----------------------------|--------------|----------------------------|
| | Key-lock | Paper-string | Wire-tie (improved method) |
| Very easy | 89% | 53% | 43% |
| Somewhat easy | 4% | 43% | 46% |
| Somewhat difficult & frustrating | 7% | 4% | 11% |
| Very difficult & frustrating | 0% | 0% | 0% |

Table 5.
Average time recorded to open package samples

| Key-lock | Paper-string | Wire-Tie (improved) |
|-----------------------------------|-----------------------------------|-------------------------------------|
| * 31.72 seconds (0.53 minutes) | * 54.92 seconds (0.92 minutes) | ** 100.27 seconds (1.67 minutes) |

* (Average time of 25 out of 28 participants)

** (Average time of 26 out of 28 participants)

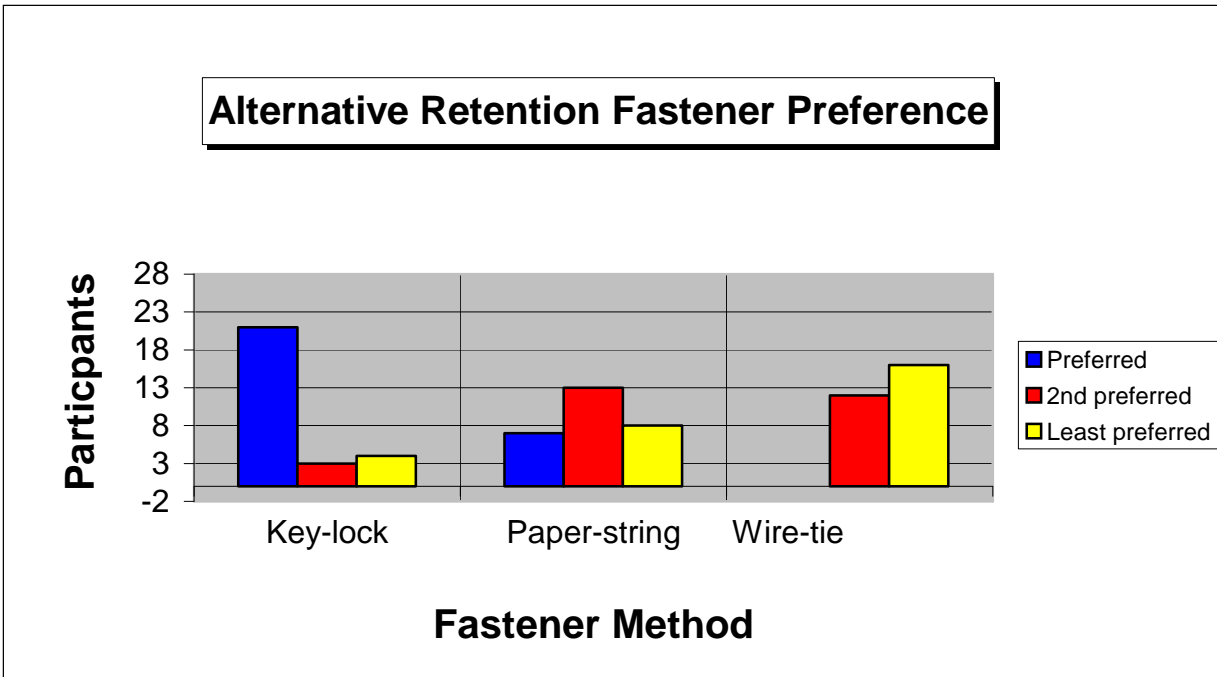


Figure 10. Overall fastener preference outcome

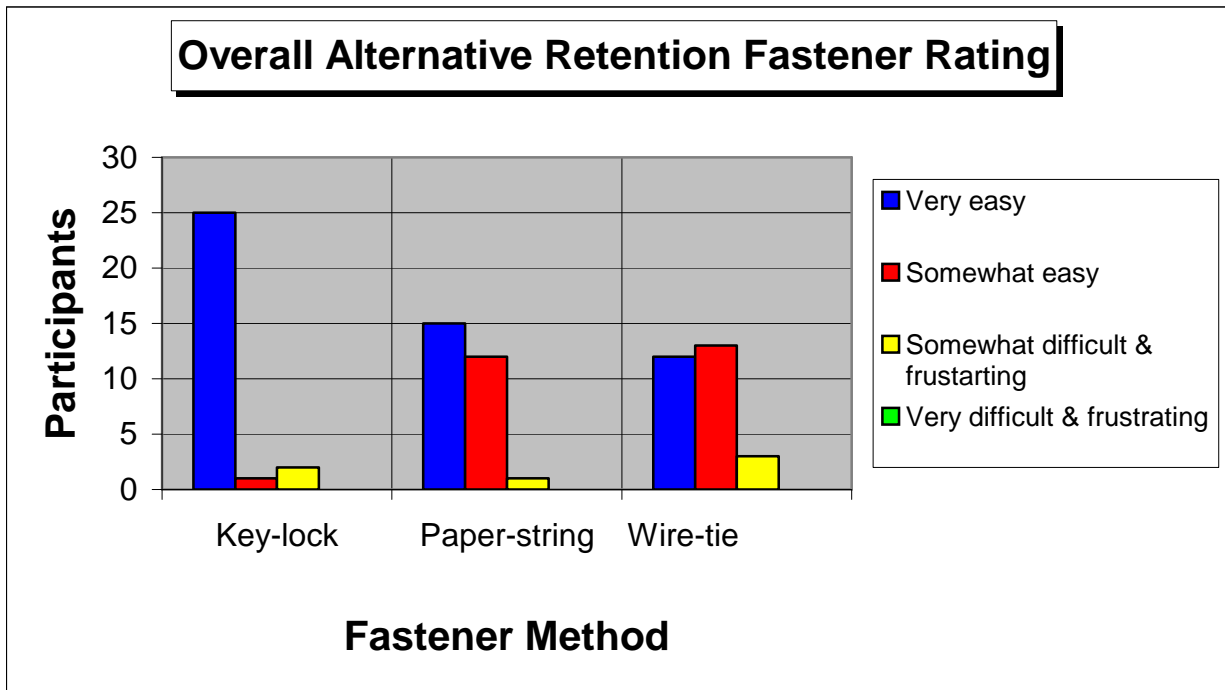


Figure 11. Overall fastener rating

Miscellaneous package features

The three fastening concepts used in this thesis was the primary focus of this study. Through the examination, it was observed that other package features occasionally influenced the overall package fastener rating. During these instances, I had to redirect the attention back to the main goal. Some of the additional package features that participants commented on when rating the fastener concepts were:

1. Frustration with the perforated easy-open door [EZOD].
 - a. Not noticing the EZOD until after opening the package.
 - b. Perforations on the EZOD were often difficult to break.

2. Frustration with removing the tape without the use of a tool.

* NOTE: This was an issue to those participants who did not notice the EZOD; instead, they tried to remove the tape to open the package to access the fasteners.

3. Emotional attachments to frustrations/dislikes of previous fastening methods. Some participants referred to prior experiences involving the previous wire-tie method when asked to rate the specific improved method used in this study.

Conclusion

“Wrap Rage” continues to be a challenge that toy manufacturers work to manage as they continue to carry out the demand of creating highly visible open-display and try-me packaging. Fisher-Price has responded to this concern via implementation of several innovative concepts to make their toy packaging more consumer-friendly.

Three of Fisher-Price’s favorable alternative retention fastener concepts were tested against each other to further assess consumer preference. As outlined in the discussion, the findings of this investigation conclude that consumers prefer the key-lock fastener as the #1 alternative method, as this method was the easiest and quickest to remove. The paper-string fastener (with corrugated backer) was the 2nd preferred alternative method. Overall, this method was easy and quick to remove. The improved wire-tie alternative was the least preferred concept. This method was not as easy and quick as the key-lock or paper-string methods, but took less time and effort to remove when compared to the previous wire-tie method often seen in toy packaging.

Recommendations

I would recommend to anyone who wishes to refer to this thesis for further study to eliminate features that could potentially influence perception of overall ratings and preferences. I would recommend using fundamental package samples that do not include tape, glue, perforated easy-open doors or anything that would introduce frustration not associated with the focus of the study. For example, instead of using a product’s existing package, I would suggest to secure the product to a simple creased corrugated sheet (folded over) that can be easily opened, exposing the fastening method process.

I would suggest to Fisher-Price to provide graphic illustrations directing how to remove

the newer fastener concepts, key-lock and paper-string. The illustrations can be printed on scrap material and attached near the actual fasteners within the package or they can be printed within graphics of package (Figures 11 and 12). Additional removal instruction can be provided for these concepts via small video clip on the Fisher-Price and Mattel website as well.

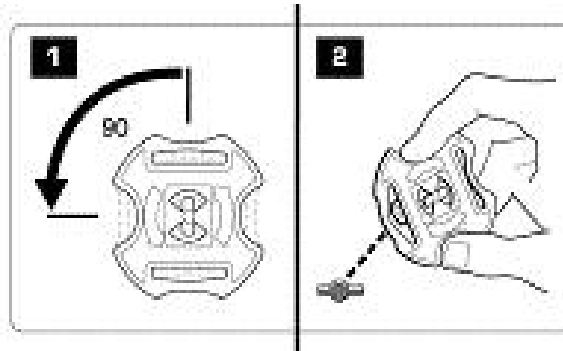


Figure 12. Sample graphic instruction illustrating how to remove the key-lock fastener.

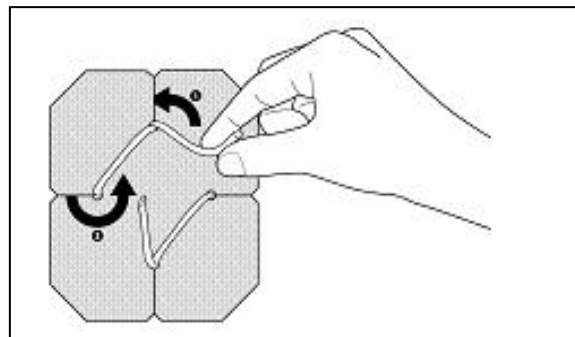


Figure 13. Sample graphic instruction illustrating how to remove the paper-string fastener.

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Appendices

Appendix A

Survey Question Results/Details

Participant 1

Package 1: Key-lock

Comments during process:

- “They [key-locks] snap right out – wonderful!”
- “That’s great – very easy.”

Observations:

- N/a

1. Overall Fastener Rating: Very easy to open

Explanation: “Key-locks were visible; arrow molded into key-lock helped to instruct how to manipulate it. It wasn’t hard to twist [undo].”

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: “They’re very easy.”

3. When asked how long they thought it took them to open the package, the participant answered: 0 minutes 15 seconds (Actual Time: n/a).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: No.

Package 2: Paper-string

Comments during process:

- “The string is a bit of a pain...lots of pieces [strings and corrugated reinforcement].”
- “Kind of hard to determine which way to unravel the string but do-able.”
- “This is similar to wire-tie, but better because you can cut this.”

Observations

- Pulled on corrugated reinforcement to figure out which way to unravel string.

1. Overall Fastener Rating: Somewhat difficult and frustrating to open

Explanation: “Can’t tell which way to unravel string.”

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: N/a

3. When asked how long they thought it took them to open the package, the participant answered: 1 minute 0 seconds (Actual Time: 1 minute 22 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: “Direction on how to undo the string would help. The ends blend together, they should be colored so you know where to grab.”

Package 3: Wire-tie (improved method)

Comments during process:

- “That was kind of easy.”
- “This is fairly easy to undo.”

Observations:

- Didn’t know where to start to undo the wire-tie.

1. Overall Fastener Rating: Very difficult and frustrating to open

Explanation: “I don’t like wire-ties in general; one of the wire-ties was difficult to remove from the product (one of the wire-ties was hidden behind the easy open perforated door).”

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: Yes.

Explanation: “It would be worse and I would try to cut them off.”

3. When asked how long they thought it took them to open the package, the participant answered: 2 minutes 30 seconds (Actual Time: 2 minutes 45 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: Alternative fastener to the wire-tie - “something softer like the string.”

Concluding Questions

When asked:

1. What is your *preferred* choice of fastener (based on this exercise), the participant answered: Key-lock.

Explanation: “It was the quickest and easiest, one little plastic piece to throw out.”

2. What is your *2nd preferred* choice of fastener (based on this exercise), the participant answered: Paper-string.

Explanation: “You can just pull them out with no struggle.”

3. What is your *least preferred* choice of fastener (based on this exercise), the participant answered: Wire-tie.

Explanation: “It was somewhat difficult to undo and pull out.”

Participant 2

Package 1: Paper-string

Comments during process:

- “Pretty easy to open.”
- “This is easier than the wire-tie.”

Observations:

- Immediately went to the bottom of the package to start to open.

1. Overall Fastener Rating: Very easy to open

Explanation: N/a

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: N/a

3. When asked how long they thought it took them to open the package, the participant answered: 0 minutes 45 seconds (Actual Time: N/a).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: No - “Pretty easy.”

Package 2: Key-lock

Comments:

- “These are my favorite.”

Observations:

- N/a

1. Overall Fastener Rating: Very easy to open

Explanation: “Key-locks are the best thing for packages ever – whoever thought of this is a genius!”

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: “They’re super easy...if you can button your jeans you can do this.”

3. When asked how long they thought it took them to open the package, the participant answered: 0 minutes 30 seconds (Actual Time: 0 minutes 26 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: N/a.

Package 3: Wire-tie (improved method)

Comments during process:

- “I would pass this off to my husband to open.”
- “These are horrible when they’re knotted but these (“figure-8” method) aren’t bad.”
- “This can be time consuming – especially when your child is screaming for the toy.”

Observations:

- N/a

1. Overall Fastener Rating: Somewhat difficult & frustrating to open

Explanation: “Wire-tie is kind of a hassle; undoing the wire was sort of a hassle – they kink up making it difficult to remove from toy.”

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: Yes, to very difficult & frustrating to open.

Explanation: “More time consuming.”

3. When asked how long they thought it took them to open the package, the participant answered: over 1 minute. (Actual Time: 1 minute 43 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: “If wire-tie wasn’t so kinked up; dislike the wire-tie method of this package; if there were less “loops” to undo it wouldn’t be so bad.”

Concluding Questions

When asked:

1. What is your *preferred choice* of fastener (based on this exercise), the participant answered: Key-lock.

Explanation: “They’re so easy and quick; it’s big enough that children won’t swallow the part.”

2. What is your *2nd preferred choice* of fastener (based on this exercise), the participant answered: Paper-string.

Explanation: “Wasn’t as easy as the key-lock but not as much of a mess as the wire-tie.”

3. What is your *least preferred choice* of fastener (based on this exercise), the participant answered: Wire-tie.

Explanation: “It was a hassle.”

Participant 3

Package 1: Wire-tie (improved method)

Comments during process:

- Initial response when participant saw the wire-tie was “Now I’m aggravated.”
- “These (wire-tie) aren’t bad – it’s pliable enough.”
- “Typically I hate these but this method wasn’t so bad.”

Observations:

- Ripped open back panel of package.

1. Overall Fastener Rating: Somewhat easy to open

Explanation: “Wire-tie in this package seemed softer than experiences in the past.”

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: Yes, to somewhat difficult & frustrating to open.

Explanation: “There would be too many; 3 is a comfortable amount.”

3. When asked how long they thought it took them to open the package, the participant answered: 2-3 minutes 0 seconds (Actual Time: N/a).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: “If everything was retained within a blister.”

Package 2: Key-lock

Comments during process:

- “Nifty – I like these.”

Observations:

- Looked for a starting point to open the package.
- Avoids destroying package incase the item has to be returned.

1. Overall Fastener Rating: Very easy to open

Explanation: N/a

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: N/a

3. When asked how long they thought it took them to open the package, the participant answered: 1-2 minutes 0 seconds (Actual Time: N/a).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: No tape.

Package 3: Paper-string

Comments during process:

- “I don’t like this ...Oh I see you’re supposed to wrap it around.”
- “I like these better than the wire-tie.”

Observations:

- Ripped corrugated backer to try to undo string.
- Didn’t like string at first glance (didn’t understand what to do).

1. Overall Fastener Rating: Somewhat easy to open

Explanation: “Initially I didn’t understand how to undo the string but after I ripped the backer I saw the pattern.”

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: Yes, to somewhat difficult & frustrating to open.

Explanation: Time consuming (especially compared to the key-lock).

3. When asked how long they thought it took them to open the package, the participant answered: 2-3 minutes 0 seconds (Actual Time: N/a).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: “If key-locks would have been used instead. String is a little tedious.”

Concluding Questions

When asked:

1. What is your *preferred choice* of fastener (based on this exercise), the participant answered: Key-lock.

Explanation: Easy to use (undo)

2. What is your *2nd preferred choice* of fastener (based on this exercise), the participant answered: Paper-string.

Explanation: “They’re easier to use (undo) than the wire-tie but not as easy as the key-lock.”

3. What is your *least preferred choice* of fastener (based on this exercise), the participant answered: Wire-tie.

Explanation: “Typically they’re difficult to use (undo) but this process was not terrible.”

Participant 4

Package 1: Paper-string

Comments during process:

- "I like the string better than wire-tie."

Observations:

- Tried to open the package from the side and top panels.

1. Overall Fastener Rating: Somewhat easy to open

Explanation: "String is easy to work with once you understand what to do. Tape was frustrating."

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: "Not a problem once you figure out how to undo them."

3. When asked how long they thought it took them to open the package, the participant answered: 8 minutes 0 seconds (Actual Time: 1 minute 5 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: No tape.

Package 2: Wire-tie (improved method)

Comments during process:

- "These are a pain but I understand they're needed for large toys."
- "This method is not difficult to undo."
- "Plastic cleats are hard to remove, but not impossible."

Observations:

- Had some difficulty removing wire-tie from package.

1. Overall Fastener Rating: Somewhat easy to open

Explanation: N/a

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: Yes (to either somewhat difficult or very difficult & frustrating to open).

Explanation: Time consuming

3. When asked how long they thought it took them to open the package, the participant answered: 4 minutes 0 seconds (Actual Time: 2 minutes 20 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: N/a.

Package 3: Key-lock

Comments during process:

- N/a

Observations:

- N/a

1. Overall Fastener Rating: Very easy to open

Explanation: “Key-locks pop right out; opens like 1-2-3.”

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: “Very easy to untwist; no force of pull needed; arrow was intuitive to twist—otherwise would have tried to pull or squeeze key-lock to undo.”

3. When asked how long they thought it took them to open the package, the participant answered: 1 minute 0 seconds (Actual Time: 0 minutes 44 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: No.

Concluding Questions

When asked:

1. What is your *preferred choice* of fastener (based on this exercise), the participant answered: Key-lock.

Explanation: “Easy to use; just turn it and it pops right out.”

2. What is your *2nd preferred choice* of fastener (based on this exercise), the participant answered: Paper-string.

Explanation: “Paper-string was easy to undo; once unraveled it was effortless to pull out.”

3. What is your *least preferred choice* of fastener (based on this exercise), the participant answered: Wire-tie.

Explanation: “Difficult to pull through.”

Participant 5

Package 1: Wire-tie (improved method)

Comments during process:

- “This could be stressful if trying to open this in a hurry.”

Observations:

- Initially the participant had a negative reaction to the wire-tie but became comfortable after going through the process of actually undoing the tie.

1. Overall Fastener Rating: Somewhat easy to open

Explanation: N/a

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: “The fasteners aren't a problem - it's getting to them.”

3. When asked how long they thought it took them to open the package, the participant answered: 3 minutes 0 seconds (Actual Time: 1 minute 52 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: N/a.

Package 2: Paper-string

Comments during process:

- At first glance of string she said “I'm going to say I won't like these...maybe because this is different...maybe when I figure it out it won't be so bad.”

- “I can see that people would like the string but I'm used to the wire-tie.”

Observations:

- Went straight to the easy open door to open the package.

1. Overall Fastener Rating: Somewhat easy to open

Explanation: N/a

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: Yes to somewhat difficult & frustrating to open.

Explanation: “String is too flimsy; they're not as easy to follow when undoing them as wire-ties.”

3. When asked how long they thought it took them to open the package, the participant answered: 0 minutes 50 seconds. (Actual Time: 0 minutes 47 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: Alternate retention fastener, like wire-

tie.

Package 3: Key-lock

Comments during process:

- “This was perfect...my kind of package.”

Observations:

- N/a

1. Overall Fastener Rating: Very easy to open

Explanation: “Key-locks are easy to turn and pop out.”

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: “They were easy.”

3. When asked how long they thought it took them to open the package, the participant answered: 0 minutes 25 seconds. (Actual Time: 0 minutes 19 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: No.

Concluding Questions

When asked:

1. What is your preferred choice of fastener (based on this exercise), the participant answered: Key-lock.

Explanation: “They're quick and they pop right out.”

2. What is your 2nd preferred choice of fastener (based on this exercise), the participant answered: Wire-tie.

Explanation: “Easier to control (manipulate) than the paper-string.”

3. What is your least preferred choice of fastener (based on this exercise), the participant answered: Paper-string.

Explanation: “They felt too flimsy.”

Participant 6

Package 1: Wire-tie (improved method)

Comments during process:

- “My husband usually uses his pocket knife to open them.”
- “This isn't that bad (wire-tie process)...this is nice.”

Observations:

- Looked for a starting point to open package.
- Ripped away at the front panel.

1. Overall Fastener Rating: Very easy to open.

Explanation: N/a

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No

Explanation: Likes the way the wire was fastened.

3. When asked how long they thought it took them to open the package, the participant answered: 3 minutes 0 seconds. (Actual Time: 1 minute 44 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: No tape.

Package 2: Paper-string

Comments during process:

- N/a

Observations:

- Ripped away at front panel.
- Pulled at corrugated reinforcement to undo string.

1. Overall Fastener Rating: Very easy to open

Explanation: “String was easier to undo than the wire-tie. It seems eco-friendly.”

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: “After you undo the string the toy falls right out. They don't hurt your fingers (like wire-tie can) when you undo them.”

3. When asked how long they thought it took them to open the package, the participant answered: 1 minute 0 seconds (Actual Time: 0 minutes 45 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: No.

Package 3: Key-lock

Comments during process:

- “That was different ... very easy.”
- “This would be great during Christmas.”

Observations:

- Tried to figure out how to undo key-lock.

1. Overall Fastener Rating: Very easy to open

Explanation: Easy process

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: “Initially it took a second to figure but was so easy (to undo) a child could probably do it.”

3. When asked how long they thought it took them to open the package, the participant answered: 0 minutes 30 seconds (Actual Time: 0 minutes 37 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: N/a.

Concluding Questions

When asked:

1. What is your *preferred choice* of fastener (based on this exercise), the participant answered: Key-lock.

Explanation: “Extremely easy to open; not a lot of excess garbage left behind.”

2. What is your *2nd preferred choice* of fastener (based on this exercise), the participant answered: Paper-string.

Explanation: N/a

3. What is your *least preferred choice* of fastener (based on this exercise), the participant answered: Wire-tie.

Explanation: “Process was easy (“figure-8” method) but dislike excess garbage/pieces left over.”

Participant 7

Package 1: Wire-tie (improved method)

Comments during process:

- “Would normally use knife or scissor...my husband would get the wire cutters out...especially on Christmas morning.”
- “This was easy to undo...you can do this with out wire cutters or scissors.”

Observations:

- Ripped package open at front panel.

1. Overall Fastener Rating: Somewhat easy to open

Explanation: “Didn't need tools to undo wire-tie.”

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: “The process allows no need for tools.”

3. When asked how long they thought it took them to open the package, the participant answered: 1-2 minutes 0 seconds (Actual Time: 1 minute 4 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: No.

Package 2: Paper-string

Comments during process:

- “That's not bad at all...it's actually easier (than wire-tie).”
- “This is easy to undo once you figure out how to undo it.”
- “I like this better than the wire-tie.”

Observations:

- Looked at back panel then went to front panel and began to open the package.

1. Overall Fastener Rating: Very easy to open

Explanation: “Easy to undo; the string was flexible and easier to manipulate than the wire-tie.”

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: Easy to undo

3. When asked how long they thought it took them to open the package, the participant answered: 1 minute 0 seconds (Actual Time: 0 minutes 42 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: No tape.

Package 3: Key-lock

Comments during process:

- "I don't like key-locks....I find these annoying."

Observations:

- Removed insert and ripped away at it trying to release the book, then finally untwisted the key-lock to release the toy.

1. Overall Fastener Rating: Somewhat difficult and frustrating to open

Explanation: "Key-locks were difficult to remove, would have preferred the wire-tie or string."

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: Yes, to very difficult and frustrating to open.

Explanation: "More annoying."

3. When asked how long they thought it took them to open the package, the participant answered: 1 minute 0 seconds (Actual Time: 1 minute 1 second).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: "If string or wire-tie was used instead."

Concluding Questions

When asked:

1. What is your *preferred choice* of fastener (based on this exercise), the participant answered: Paper-string.

Explanation: "Unwrapping the string around the backer was very easy to do; this was efficiently done."

2. What is your *2nd preferred choice* of fastener; (based on this exercise), the participant answered: Wire-tie.

Explanation: N/a

3. What is your *least preferred choice* of fastener; (based on this exercise), the participant answered: Key-lock.

Explanation: "time consuming; didn't know the key-lock was not part of the toy; annoying to get off."

Participant 8

Package 1: Wire-tie (improved method)

Comments during process:

- “This method of how the wire-tie is applied is better (that previous experiences).”
- “I hate the tape ... at home I would grab a knife for the tape.”

Observations:

- N/a

1. Overall Fastener Rating: Very easy to open

Explanation: N/a

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: N/a

3. When asked how long they thought it took them to open the package, the participant answered: 3 minutes 0 seconds (Actual Time: 3 minutes 0 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: Allowing use of a tool to open the package.

Package 2: Key-lock

Comments during process:

- N/a

Observations:

- N/a

1. Overall Fastener Rating: Very easy to undo.

Explanation: “After package was opened it was easy to pull out insert and undo key-locks.”

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: “Very simple and easy to remove.”

3. When asked how long they thought it took them to open the package, the participant answered: 2 minutes 30 seconds (Actual Time: 1 minute 18 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: “If allowed to use a tool to open package.”

Package 3: Paper-string

Comments during process:

- “This is my first time seeing this (string).”

Observations:

- Participant felt like she struggled a bit with the string.

1. Overall Fastener Rating: Very easy to open

Explanation: “You didn't have to open the whole box.”

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: Yes, to somewhat difficult and frustrating to open.

Explanation: “Not intuitive on how to undo string and the string got caught in the corrugated backer.”

3. When asked how long they thought it took them to open the package, the participant answered: 2 minutes 0 seconds (Actual Time: 2 minutes 0 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: No.

Concluding Questions

When asked:

1. What is your *preferred choice* of fastener (based on this exercise), the participant answered: Key-lock.

Explanation: “It was simple to undo.”

2. What is your *2nd preferred choice* of fastener (based on this exercise), the participant answered: Wire-tie.

Explanation: “The wire-tie didn't get tangled like the paper-string.”

3. What is your *least preferred choice* of fastener (based on this exercise), the participant answered: Paper-string.

Explanation: “The string became tangled within the corrugated backer.”

Participant 9

Package 1: Wire-tie (improved method)

Comments during process:

- “This is one of the easiest packages I’ve ever opened.”
- “I usually use tools to open packages.”

Observations:

- Looked for a starting point to open package.

1. Overall Fastener Rating: Somewhat easy to open.

Explanation: “Wire-ties were pretty easy to remove.”

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: Yes, to somewhat difficult and frustrating to open.

Explanation: “There would be more to undo.”

3. When asked how long they thought it took them to open the package, the participant answered: 1 minute 30 seconds (Actual Time: 1 minute 47 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: N/a.

Package 2: Paper-string

Comments during process:

- “I like the string better.”
- “I would be thrilled to see paper-string on all packages.”
- “My son would play with the string...making letters and shapes out of them.”
- “I think the string is safer than the wire-tie...my kids could choke on the wire.”

Observations:

- N/a

1. Overall Fastener Rating: Very easy to open

Explanation: “String was easier to manipulate than the wire-tie.”

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: Yes to somewhat easy to open.

Explanation: “There would be more to do.”

3. When asked how long they thought it took them to open the package, the participant answered: 0 minutes 45 seconds. (Actual Time: 0 minutes 56 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: No.

Package 3: Key-lock

Comments during process:

- “These are interesting...I like the string better.”
- “I don't like these ... I am not a fan.”
- “These may be difficult to undo if you don't have nails.”
- “My son would try to put these in his mouth.”

Observations:

- N/a

1. Overall Fastener Rating: Very easy to open

Explanation: N/a

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: Yes, to somewhat difficult & frustrating to open.

Explanation: More key-locks to undo.

3. When asked how long they thought it took them to open the package, the participant answered: 0 minutes 42 seconds. (Actual Time: 0 minutes 35 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: “Use string instead.”

Concluding Questions

When asked:

1. What is your *preferred choice* of fastener (based on this exercise), the participant answered: Paper-string.

Explanation: “Easiest to manipulate”

2. What is your *2nd preferred choice* of fastener (based on this exercise), the participant answered: Wire-tie.

Explanation: “Was easier than the key-lock.”

3. What is your *least preferred choice* of fastener (based on this exercise), the participant answered: Key-lock.

Explanation: “Seemed difficult to undo, didn't know how many times to twist to release.”

Participant 10

Package 1: Wire-tie (improved method)

Comments during process:

- "I hate these."

Observations:

- Tried to find a starting point to open package.

1. Overall Fastener Rating: Somewhat easy to open

Explanation: "Wire-ties weren't too bad to undo and pulled out fairly easy."

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: Yes, to somewhat difficult & frustrating to open.

Explanation: "There would be more to undo."

3. When asked how long they thought it took them to open the package, the participant answered: 2-3 minutes 0 seconds (Actual Time: 1 minute 54 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: "If fewer ties were used; one instead of two."

Package 2: Paper-string

Comments during process:

- "String came right off and didn't get stuck like the wire-tie."

Observations:

- Pulled at corrugated backer to get at and remove string.

1. Overall Fastener Rating: Somewhat easy to open

Explanation: "String came off of product very easily."

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: "Easier to do than the wire-tie."

3. When asked how long they thought it took them to open the package, the participant answered: 1 minute 30 seconds (Actual Time: 0 minutes 51 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: N/a.

Package 3: Key-lock

Comments during process:

- “Awww...these are what I like.”

Observations:

- Looked over package for a starting point to open.

1. Overall Fastener Rating: Very easy to open

Explanation: “Quick twist and they (key-locks) are out...this is better than the string.”

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: “They're easy to twist and remove.”

3. When asked how long they thought it took them to open the package, the participant answered: 0 minutes 20 seconds (Actual Time: 0 minutes 22 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: No.

Concluding Questions

When asked:

1. What is your *preferred choice* of fastener (based on this exercise), the participant answered: Key-lock.

Explanation: “Easy to undo, no extra wire to remove.”

2. What is your *2nd preferred choice* of fastener (based on this exercise), the participant answered: Paper-string.

Explanation: “Removed from the toy easy and would be easy to cut.”

3. What is your *least preferred choice* of fastener (based on this exercise), the participant answered: Wire-tie.

Explanation: “Somewhat difficult to remove from the toy.”

Participant 11

Package 1: Wire-tie (improved method)

Comments during process:

- "These are cool ("figure-8" method)...you need these on Christmas morning."
- "I hate tape."

Observations:

- Participant had a cast on left arm.
- Ripped at side of package to open.

1. Overall Fastener Rating: Very easy to open

Explanation: "Process was OK."

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: "Was easy to open, a few more wouldn't make a difference."

3. When asked how long they thought it took them to open the package, the participant answered: 2 minutes 0 seconds (Actual Time: 1 minute 43 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: "Other than the fact that both hands would have helped; nothing."

Package 2: Paper-string

Comments during process:

- N/a

Observations:

- Ripped away at package very quickly and aggressively.

1. Overall Fastener Rating: Very easy to open

Explanation: "Not a lot of twisting to do; it was obvious to see how to undo the string."

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: "A few more wouldn't make a difference."

3. When asked how long they thought it took them to open the package, the participant answered: 0 minutes 30 seconds (Actual Time: 0 minutes 25 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: No.

Package 3: Key-lock

Comments during process:

- "You're kidding." (Initial response at first sight of key-locks)

Observations:

- Ripped away at sides and back to open package.
- Ripped away at insert trying to remove the toy.
- Was successful in removing the key-locks but didn't understand how they actually came off.

1. Overall Fastener Rating: Somewhat difficult & frustrating to open

Explanation: "Felt that package was tightly packaged. At first glance of key-lock perception was that a tool would be required to undo them."

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: Yes, to very difficult and frustrating to open.

Explanation: "I thought it would take a while to do even before I actually tried to remove them."

3. When asked how long they thought it took them to open the package, the participant answered: 3 minutes 0 seconds (Actual Time: 1 minute 4 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: "Make key-lock more intuitive on how to remove, if at home a screwdriver would have been used to try to undo them."

Concluding Questions

When asked:

1. What is your *preferred choice* of fastener (based on this exercise), the participant answered: Paper-string.

Explanation: "They're quick and removes easily from product."

2. What is your *2nd preferred choice* of fastener (based on this exercise), the participant answered: Wire-tie.

Explanation: "Not as easy to undo compared to the string."

3. What is your *least preferred choice* of fastener (based on this exercise), the participant answered: Key-lock.

Explanation: "Automatically looks difficult at first glance; initially it's not intuitive how to remove."

Participant 12

Package 1: Wire-tie (improved method)

Comments during process:

- “This isn't bad...I don't like when the ties are twisted.”
- “I like that there aren't too many ties.”

Observations:

- N/a

1. Overall Fastener Rating: Very easy to open

Explanation: “Wire-ties were easy to undo.”

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: “Process is easy.”

3. When asked how long they thought it took them to open the package, the participant answered: 1 minute 0 seconds (Actual Time: 0 minutes 46 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: “If a blister was used to secure the whole item with no wire-ties.”

Package 2: Paper-string

Comments during process:

- “These ties (string) are more confusing.”
- “These seem more environmentally friendly than the wire-tie.”

Observations

- N/a

1. Overall Fastener Rating: Very easy to open

Explanation: “Was easy to do after figuring out how to undo string. String released very easy and is more flexible (than wire-tie) and wouldn't damage the vacuum.”

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: “Less yanking to remove string compared to the wire-tie.”

3. When asked how long they thought it took them to open the package, the participant answered: 0 minutes 30 seconds (Actual Time: 0 minutes 35 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: “Eliminate the corrugated backer.”

Package 3: Key-lock

Comments during process:

- “It’s a bit hard to twist the key-lock long the hole here (key-lock die cut pattern).”
- “My child might try to pick this (key-lock) up before picking up a wire-tie.”

Observations:

- Twisted key-lock many times as if trying to unscrew a cap.
- Concerned that child would try to “mouth” the key-lock (compared to the wire-tie)

1. Overall Fastener Rating: Very easy to open

Explanation: “Had a previous experience with a similar fastener; therefore knew what to do.”

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: Yes, to somewhat easy to open.

Explanation: “The key-lock die cut pattern made it difficult to remove when turning the fastener. My hand doesn’t handle twisting very well.”

3. When asked how long they thought it took them to open the package, the participant answered: 0 minutes 17 seconds (Actual Time: 0 minutes 22 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: “If the key-lock had a protruding part to grab onto to aid in twisting it off.”

Concluding Questions

When asked:

1. What is your *preferred choice* of fastener (based on this exercise), the participant answered: Paper-string.

Explanation: “Its eco friendly, easier (than wire-tie) to undo and remove.

2. What is your *2nd preferred choice* of fastener (based on this exercise), the participant answered: Wire-tie.

Explanation: “This method didn’t have lots of twists like previous experiences.”

3. What is your *least preferred choice* of fastener (based on this exercise), the participant answered: Key-lock.

Explanation: Disliked the twisting action of the key-lock and felt that it could be a potential choking hazard.

Participant 13

Package 1: Wire-tie (improved method)

Comments during process:

- “There's no way you can get into a Fisher-Price package without scissors.”
- “Fisher-Price toy packages are more secure than most other toy manufacturers.”
- “It takes forever to open Fisher-Price packages - which is a good thing because you know it won't get stolen.”
- “When I open packages I often think about what the package engineer was thinking when they designed the package.”

Observations:

- N/a

1. Overall Fastener Rating: Somewhat easy to open

Explanation: Likes that scissors weren't needed and didn't take as long as she thought it would to open.

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: Yes, to somewhat difficult and frustrating to open.

Explanation: “There would be more wire-ties to open and the package would probably be more cumbersome.”

3. When asked how long they thought it took them to open the package, the participant answered: 2 minutes 0 seconds (Actual Time: 1 minute 40 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: “If tools were allowed; otherwise nothing.”

Package 2: Paper-string

Comments during process:

- N/a

Observations:

- Tried a different approach to open this package (compared to that of package #1) to see if it would reduce the amount of time to open.

1. Overall Fastener Rating: Somewhat easy to open

Explanation: “It didn't take as long as I thought.”

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: “More string fasteners to undo wouldn't make it more difficult to open.”

3. When asked how long they thought it took them to open the package, the participant answered: 1 minute 30 seconds. (Actual Time: 1 minute 5 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: No.

Package 3: Key-lock

Comments during process:

- "I like these....they're less involved."

Observations:

- N/a

1. Overall Fastener Rating: Very easy to open

Explanation: "I didn't have to do too much; I like them better than the wire-tie and string."

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: "These aren't so involved; the fact that all you do is turn without having to unravel is easy to do no matter how many."

3. When asked how long they thought it took them to open the package, the participant answered: 0 minutes 30 seconds. (Actual Time: 0 minutes 24 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: No.

Concluding Questions

When asked:

1. What is your *preferred choice* of fastener (based on this exercise), the participant answered: Key-lock.

Explanation: "It's quick and easy; I don't have to unravel and twist to remove."

2. What is your *2nd preferred choice* of fastener (based on this exercise), the participant answered: Wire-tie.

Explanation: "It wasn't as easy as the key-lock but not as difficult as the string."

3. What is your *least preferred choice* of fastener (based on this exercise), the participant answered: Paper-string.

Explanation: "It seemed like it took longer to undo than the wire-tie. It seemed like I had to do more (unraveling) compared to the wire-tie."

Participant 14

Package 1: Wire-tie (improved method)

Comments during process:

- "I usually grab the tool box before I start to open toy packages at Christmas."
- "This is different ("figure-8" method) ...I have never opened anything like this before...this is nice."
- "Usually there are too many wire-ties and they are twisted and taped down."
- "This method allows you not to have to untwist."
- I like that the toy was screwed down to the package like other toys I have seen."

Observations:

- N/a

1. Overall Fastener Rating: Very easy to open

Explanation: "It was just two steps; open the back of the package and undo the wire-tie, it was simple."

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: "The way the wire-ties were secured ("figure-8" method) made it easy to undo."

3. When asked how long they thought it took them to open the package, the participant answered: 1 minute 0 seconds. (Actual Time: 1 minute 10 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: "If it didn't have tape; otherwise no."

Package 2: Paper-string

Comments during process:

- "What is this?...Is this supposed to be some type of quick release or something?"
- "It wouldn't be a bad idea if there were instructions on how to undo this (string)."
- "I have never seen this before...wasn't sure what I'm supposed to do."

Observations:

- Wasn't sure what to do with string at first glance.

1. Overall Fastener Rating: Somewhat easy to open

Explanation: "Wasn't sure how to undo string."

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: "Once I removed one I knew how to approach the others."

3. When asked how long they thought it took them to open the package, the participant

answered: 1 minute 0 seconds (Actual Time: 1 minute 4 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: No.

Package 3: Key-lock

Comments during process:

- “Oh – what’s this?”
- “I like this...they took only 30 seconds to remove.”

Observations:

- Looked at key-lock, noticed the molded arrow, and turned it to release the toy.

1. Overall Fastener Rating: Very easy to open

Explanation: “Extremely easy! Didn't have to untie anything – the arrow told me what to do.”

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: “There was no untwisting involved.”

3. When asked how long they thought it took them to open the package, the participant answered: 0 minutes 30 seconds (Actual Time: 0 minutes 19 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: No.

Concluding Questions

When asked:

1. What is your *preferred choice* of fastener (based on this exercise), the participant answered: Key-lock.

Explanation: “It was very simple and it gave direction on how to remove it.”

2. What is your *2nd preferred choice* of fastener (based on this exercise), the participant answered: Wire-tie.

Explanation: “Liked the process (“figure-8” method) of the plastic backer.”

3. What is your *least preferred choice* of fastener (based on this exercise), the participant answered: Paper-string.

Explanation: “Even though it was quicker to undo than the wire-tie it wasn't intuitive enough to know how to undo it.”

Participant 15

Package 1: Wire-tie (improved method)

Comments during process:

- “I like the way the wire-tie is secured.”
- “The wire-tie was easy to undo.”
- “Tape could be an issue with no tools, especially if you don’t have nails.”

Observations:

- N/a

1. Overall Fastener Rating: Somewhat easy to open

Explanation: N/a

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: N/a

3. When asked how long they thought it took them to open the package, the participant answered: 5 minutes 0 seconds (Actual Time: 3 minutes 28 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: “Using a tool to cut tape.”

Package 2: Paper-string

Comments during process:

- N/a

Observations:

- Rotated the corrugated backer in an effort to release string
- Felt that string wasn't as easy to manipulate as the wire-tie.

1. Overall Fastener Rating: Very easy to open

Explanation: N/a

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: N/a

3. When asked how long they thought it took them to open the package, the participant answered: 2 minutes 0 seconds (Actual Time: 0 minutes 44 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: N/a.

Package 3: Key-lock

Comments during process:

- “This (arrow molded on the key-lock) is cute.”

Observations:

- N/a

1. Overall Fastener Rating: Very easy to open

Explanation: N/a

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: N/a

3. When asked how long they thought it took them to open the package, the participant answered: 1 minute 30 seconds (Actual Time: 0 minutes 33 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: No.

Concluding Questions

When asked:

1. What is your *preferred choice* of fastener (based on this exercise), the participant answered: Key-lock.

Explanation: “All I had to do was turn and it popped right out.”

2. What is your *2nd preferred choice* of fastener (based on this exercise), the participant answered: Wire-tie.

Explanation: “Easy to manipulate.”

3. What is your *least preferred choice* of fastener (based on this exercise), the participant answered: Paper-string.

Explanation: Felt that both the string and corrugated backer had to be manipulated to release string.

Participant 16

Package 1: Wire-tie (improved method)

Comments during process:

-“I usually use a knife for the tape.”

Observations:

- N/a

1. Overall Fastener Rating: Somewhat easy to open

Explanation: “This toy was easy to open compared to the truck toys, that are usually screwed down to the package.”

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: Yes, to somewhat difficult and frustrating to open.

Explanation: “There would more ties to undo.”

3. When asked how long they thought it took them to open the package, the participant answered: 5 minutes 0 seconds (Actual Time: 1 minute 0 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: “No – it was easy compared to other toys.”

Package 2: Paper-string

Comments during process:

– “I have never seen these (string) before.”

– “I could use the string to hang the toy in my son’s room.”

Observations:

- N/a

1. Overall Fastener Rating: Very easy to open

Explanation: “After I tore the paper backer near the string the toy fell right out.”

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: “The string was way easier than the wire-tie, I could undo more of these with no problem.”

3. When asked how long they thought it took them to open the package, the participant answered: 0 minutes 1 second (Actual Time: 0 minutes 33 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: No.

Package 3: Key-lock

Comments during process:

- "This was very easy to open."

Observations:

- Turned key-lock multiple times as if screwing off a threaded cap.

1. Overall Fastener Rating: Very easy to open

Explanation: "It was very simple, you just twist it off."

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: "No tools needed, very simple and quick like the string but quicker."

3. When asked how long they thought it took them to open the package, the participant answered: 0 minutes 20 seconds (Actual Time: 0 minutes 24 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: No.

Concluding Questions

When asked:

1. What is your *preferred choice* of fastener (based on this exercise), the participant answered: Paper-string.

Explanation: "One rip of the backer and it was off. If I could choose two #1 preferred fasteners it would be string and key-lock."

2. What is your *2nd preferred choice* of fastener (based on this exercise), the participant answered: Key-lock.

Explanation: "It was simple, no tools were needed, and they twist right off."

3. What is your *least preferred choice* of fastener (based on this exercise), the participant answered: Wire-tie.

Explanation: "This package was ok, but at Christmas time when there are more toys this could be frustrating."

Participant 17

Package 1: Wire-tie (improved method)

Comments during process:

- "I usually use a knife for the tape."
- "I'm not a fan of the wire-ties...concerned that the children would get to them and they're a pain to open."
- "This package wasn't too bad to open (undo)."

Observations:

- Ripped away at the sides of the package.

1. Overall Fastener Rating: Very easy to open

Explanation: "The wire-ties were straightforward and easy to remove."

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: Yes, to somewhat easy to open.

Explanation: "More fasteners to undo; two isn't much but anything more is too much."

3. When asked how long they thought it took them to open the package, the participant answered: 1 minute 30 seconds (Actual Time: 1 minute 26 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: "A tool to cut the tape, otherwise no."

Package 2: Paper-string

Comments during process:

- "This (string) is a little confusing."
- "Initially it was unclear as to how to undo these; however once I undid them it was easier than the wire-tie."

Observations:

- Had an apprehensive look at first glance of string.

1. Overall Fastener Rating: Very easy to open

Explanation: "Once I undid the first string the toy fell out."

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: "It takes so little effort to do, it's easier to manipulate than the wire-tie."

3. When asked how long they thought it took them to open the package, the participant answered: 0 minutes 45 seconds (Actual Time: 0 minutes 28 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: No.

Package 3: Key-lock

Comments during process:

- "I love this...just one turn and it's done."

Observations:

- N/a

1. Overall Fastener Rating: Very easy to open

Explanation: "The key-locks are very simple and the package gave you a starting point that told you how to open it."

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: "They're easy to do."

3. When asked how long they thought it took them to open the package, the participant answered: 0 minutes 30 seconds. (Actual Time: 0 minutes 26 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: "The easy open door was a little difficult to open, otherwise nothing."

Concluding Questions

When asked:

1. What is your *preferred choice* of fastener (based on this exercise), the participant answered: Key-lock.

Explanation: "No extra pulling, twisting or excess pieces left behind; just one easy step."

2. What is your *2nd preferred choice* of fastener (based on this exercise), the participant answered: Paper-string.

Explanation: "There wasn't a lot of effort needed once I figured it out; seems easier to remove from the toy than the wire-tie."

3. What is your *least preferred choice* of fastener (based on this exercise), the participant answered: Wire-tie.

Explanation: "Manipulation of the process [undoing the wire-tie] can be annoying, even in this experience."

Participant 18

Package 1: Wire-tie (improved method)

Comments during process:

- "I like the process of these ties ... you just unwind it a few times and it comes off."

Observations:

- N/a

1. Overall Fastener Rating: Very easy to open

Explanation: N/a

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: "The wire-ties were easy undo considering how they were secured."

3. When asked how long they thought it took them to open the package, the participant answered: 2 minutes 0 seconds (Actual Time: 1 minute 31 seconds).

2. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: "If tape was easier to remove, otherwise nothing."

Package 2: Paper-string

Comments during process:

- N/a

Observations:

- N/a

1. Overall Fastener Rating: Very easy to open

Explanation: "String was easy to undo."

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: "It was easy to undo."

3. When asked how long they thought it took them to open the package, the participant answered: 0 minutes 45 seconds (Actual Time: 0 minutes 49 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: No.

Package 3: Key-lock

Comments during process:

- N/a

Observations:

- N/a

1. Overall Fastener Rating: Very easy to open

Explanation: "Just twist and remove."

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: "They were easy to undo and you only had one piece left behind."

3. When asked how long they thought it took them to open the package, the participant answered: 0 minutes 30 seconds (Actual Time: 0 minutes 26 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: No.

Concluding Questions

When asked:

1. What is your *preferred choice* of fastener (based on this exercise), the participant answered: Key-lock.

Explanation: "Seemed easier than the other two methods (string and wire-tie)."

2. What is your *2nd preferred choice* of fastener (based on this exercise), the participant answered: Paper-string.

Explanation: "This process was simple and easier than the wire-tie." The participant was concerned that the paper string would not hold up during shipping considering how easily it released from the product.

3. What is your *least preferred choice* of fastener (based on this exercise), the participant answered: Wire-tie.

Explanation: "The wire-tie was the hardest to release and remove from the toy."

Participant 19

Package 1: Wire-tie (improved method)

Comments during process:

- “The tape is a hassle, but I like how the wire-tie is secured on this item.”

Observations

- Looked for a starting point to open package.

1. Overall Fastener Rating: Somewhat easy to open

Explanation: N/a

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: “The wire-ties in this package did not bother me. They only bother me when they are wrapped around the wheels or tight crevice of a toy.”

3. When asked how long they thought it took them to open the package, the participant answered: 3 minutes 0 seconds (Actual Time: N/a).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: Make tape easier to remove, otherwise no.

Package 2: Paper-string

Comments during process:

- “I like that I can bend the backer to undo the string.”
- “String doesn't kink up like the wire-tie...this is better than the wire-tie.”
- “The tape is still annoying.”

Observations:

- Looked at string for a moment, as if trying to figure out how to approach it.

1. Overall Fastener Rating: Somewhat easy to open

Explanation: N/a

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: N/a

3. When asked how long they thought it took them to open the package, the participant answered: 2 minutes 0 seconds (Actual Time: 2 minutes 7 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: “If tape was easier to remove, otherwise no..”

Package 3: Key-lock

Comments during process:

- “These are very easy to open.”
- “I like these because there's no extra pieces left behind like with the wire-tie and string.”
- “I love the idea of the easy open door.”

Observations:

- N/a

1. Overall Fastener Rating: Very easy to open

Explanation: “Key-locks were easy to undo.”

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: “Increase in quantity of key-lock wouldn't be a bother because they're easy to remove.”

3. When asked how long they thought it took them to open the package, the participant answered: 1 minute 30 seconds (Actual Time: 0 minutes 25 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: N/a.

Concluding Questions

When asked:

1. What is your *preferred choice* of fastener (based on this exercise), the participant answered: Key-lock.

Explanation: “They're very easy to remove; not many pieces left behind – no mess. I wouldn't be as concerned if my child picked this up as I would if my child would pick up a wire-tie or string.”

2. What is your *2nd preferred choice* of fastener (based on this exercise), the participant answered: Paper-string.

Explanation: “It was easy to undo and release from the product.”

3. What is your *least preferred choice* of fastener (based on this exercise), the participant answered: Wire-tie.

Explanation: “The wire-tie kinked up making it difficult to pull out.”

Participant 20

Package 1: Wire-tie (improved method)

Comments during process:

- “This wire-tie method is not too bad ... they're not twisted down.”
- “My only concern is that my child would try to get at wire-tie.”
- “It’s a little hard to find the easy open door because you can’t find the perforation.”

Observations:

- N/a

1. Overall Fastener Rating: Very easy to open

Explanation: N/a

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: “The process wasn't difficult.”

3. When asked how long they thought it took them to open the package, the participant answered: 1 minute 30 seconds (Actual Time: 1 minute 9 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: “Make the easy open door arrow more noticeable, otherwise nothing.”

Package 2: Paper-string

Comments during process:

- “I don’t like this as much ... the cardboard (backer) is a pain...it gets in they way.”
- “The string itself was easier to manipulate than the wire-tie.”
- “I like the security of the wire-tie but prefer the ease of the string.”

Observations:

- N/a

1. Overall Fastener Rating: Somewhat easy to open

Explanation: “The string itself was easy but at first glance I didn’t know what to do with the corrugated backer. I would have cut the string (without opening the package) if I opened this at home.”

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: Yes, to somewhat difficult & frustrating to open.

Explanation: “I would get frustrated with the corrugated backers.”

3. When asked how long they thought it took them to open the package, the participant answered: 1 minute 30 seconds (Actual Time: 0 minutes 48 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: No.

Package 3: Key-lock

Comments during process:

- N/a

Observations:

- N/a

1. Overall Fastener Rating: Very easy to open

Explanation: "Key-lock was easy; there was no un-tying."

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: Easy to do.

3. When asked how long they thought it took them to open the package, the participant answered: 0 minutes 27 seconds (Actual Time: 0 minutes 22 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: No.

Concluding Questions

When asked:

1. What is your *preferred choice* of fastener (based on this exercise), the participant answered: Key-lock.

Explanation: "Easy process...no extra pieces and no mess."

2. What is your *2nd preferred choice* of fastener (based on this exercise), the participant answered: Wire-tie.

Explanation: "Not as easy as the key-lock."

3. What is your *least preferred choice* of fastener (based on this exercise), the participant answered: Paper-string.

Explanation: "Corrugated backer is annoying."

Participant 21

Package 1: Wire-tie (improved method)

Comments during process:

- “These are nice...I like this method...this isn’t bad.”
- “The toy was easy to remove from the package.”

Observations

- N/a

1. Overall Fastener Rating: Very easy to open

Explanation: “This method was nice compared to the twisty method I’ve seen.”

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: “The process of undoing the wire-tie is easy.”

3. When asked how long they thought it took them to open the package, the participant answered: 0 minutes 20 seconds (Actual Time: 0 minutes 59 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: No.

Package 2: Paper-string

Comments during process:

- At first glance “Oh I don’t like this.... this is very confusing.”
- “I don’t like the backers (corrugated).”
- “It wasn’t so bad once I started to undo it.”

Observations

- N/a

1. Overall Fastener Rating: Somewhat easy to open

Explanation: “I wasn’t clear what to do with string initially; wire-tie method was clear.”

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: Yes, to somewhat difficult & frustrating to open.

Explanation: “Because it was so unclear on what to do at first glance.”

3. When asked how long they thought it took them to open the package, the participant answered: 2 minutes 0 seconds (Actual Time: 1 minute 20 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: Replace the paper-string with the wire-tie.

Package 3: Key-lock

Comments during process:

- “Very easy once I got passed the tape.”

Observations:

-N/a

1. Overall Fastener Rating: Very easy to open

Explanation: N/a

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: “It was simple and easy.”

3. When asked how long they thought it took them to open the package, the participant answered: 0 minutes 45 seconds (Actual Time: 0 minutes 45 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: No.

Concluding Questions

When asked:

1. What is your *preferred choice* of fastener (based on this exercise), the participant answered: Key-lock.

Explanation: “Process was simple, toy popped right out.”

2. What is your *2nd preferred choice* of fastener (based on this exercise), the participant answered: Wire-tie.

Explanation: “Liked that you didn’t have to twist the wire-tie many times to undo.”

3. What is your *least preferred choice* of fastener (based on this exercise), the participant answered: Paper-string.

Explanation: “Process wasn't intuitive in the beginning.”

Participant 22

Package 1: Wire-tie (improved method)

Comments during process:

- "I use a knife and scissors to open packages."

Observations

- Looked for a starting point to open the package.
- Looked around the toy itself to see how it was secured, didn't notice the fastener used to secure the toy.
- Noticed the easy open door arrow after the package was already opened.

1. Overall Fastener Rating: Somewhat difficult and frustrating to open.

Explanation: N/a

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: Yes, to very difficult & frustrating to open.

Explanation: "There would be more to undo."

3. When asked how long they thought it took them to open the package, the participant answered: 3 minutes 0 seconds (Actual Time: 1 minute 59 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: "If there was something on the front informing that there is an easy open door, otherwise nothing."

Package 2: Paper-string

Comments during process:

- "I loved it (string)."

Observations:

- N/a

1. Overall Fastener Rating: Very easy to open

Explanation: String seemed more flexible and easier to manipulate than the wire-tie."

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: "As long as there is direction on where to start to open the package; the quantity of string wouldn't matter."

3. When asked how long they thought it took them to open the package, the participant answered: 0 minutes 30 seconds (Actual Time: 0 minutes 33 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: No.

Package 3: Key-lock

Comments during process:

- “Oh – these...I’ve had issues with these before...but these are easy.”

Observations

- N/a

1. Overall Fastener Rating: Very easy to open

Explanation: “This package had the easy open door arrow and the key-locks were easy to remove.”

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: “Quantity wouldn’t matter; they’re easy to undo.”

3. When asked how long they thought it took them to open the package, the participant answered: 0 minutes 7 seconds (Actual Time: 0 minutes 17 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: No.

Concluding Questions

When asked:

1. What is your *preferred choice* of fastener (based on this exercise), the participant answered: Key-lock.

Explanation: “I like the process of twist and remove...I need something fast and wire-ties take too much time and effort.”

2. What is your *2nd preferred choice* of fastener (based on this exercise), the participant answered: Paper-string.

Explanation: “They’re more flexible than a wire-tie; they’re easy to undo and remove from the product.”

3. What is your *least preferred choice* of fastener (based on this exercise), the participant answered: Wire-tie.

Explanation: “It’s annoying when the wire gets caught in the plastic backer.”

Participant 23

Package 1: Wire-tie (improved method)

Comments during process:

- "Tape is never fun... I usually use a knife or scissors to get it off."
- "I try to get to the back because that's usually where the toy is tied."
- "I don't mind wire-ties when there are not two ties tied together."

Observations

- N/a

1. Overall Fastener Rating: Very easy to open

Explanation: "The only problem was the tape, but other than that it was ok. I liked that there were only 2 wire-ties used."

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: "They were easy to find and they weren't twisted many times or twisted around the toy numerous times."

3. When asked how long they thought it took them to open the package, the participant answered: 2 minutes 0 seconds (Actual Time: 1 minute 43 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: No.

Package 2: Paper-string

Comments during process:

- N/a

Observations

- Tried to open bottom front panel and was unsuccessful; opened back panel.

1. Overall Fastener Rating: Somewhat easy to open

Explanation: "Initially it wasn't intuitive on how to undo the string. Once I figured this out it was very easy."

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: Yes, to somewhat difficult & frustrating to open.

Explanation: "There would be more to untwist, meaning more effort."

3. When asked how long they thought it took them to open the package, the participant answered: 2 minutes 30 seconds (Actual Time: 0 minutes 58 seconds).

4. When asked if there was anything that could have made this process easier (in relation

to the package fastener) the participant answered: No.

Package 3: Key-lock

Comments during process:

- “Oh good gracious” (trying to figure out how to remove the key-lock).”
- “Removing the tape hurts your fingers when you don’t have a tool to use.”

Observations

- Initially the participant wasn’t sure how to remove the key-lock.

1. Overall Fastener Rating: Very easy to open

Explanation: “All you had to do was twist the key-lock. Didn’t know what to do at first but the molded arrow on key-lock gave direction on what to do.”

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: “More of this fastener wouldn’t matter.”

3. When asked how long they thought it took them to open the package, the participant answered: 0 minutes 30 seconds. (Actual Time: 0 minutes 30 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: No.

Concluding Questions

When asked:

1. What is your *preferred choice* of fastener (based on this exercise), the participant answered: Key-lock.

Explanation: “There’s just one piece; seemed faster to undo than wire-tie or string.”

2. What is your *2nd preferred choice* of fastener (based on this exercise), the participant answered: Wire-tie.

Explanation: “It was easy to see how to undo the tie and it wasn’t wrapped too many times around the plastic backer.”

3. What is your *least preferred choice* of fastener (based on this exercise), the participant answered: Paper-string.

Explanation: “It took more effort than the wire-tie.”

Participant 24

Package 1: Wire-tie (improved method)

Comments during process:

- “I generally hate wire-ties.”
- “This method was easier than what I’ve experienced with wire-ties.”
- “I like the concept of the easy open door but it was a bit tough to open.”

Observations

- N/a

1. Overall Fastener Rating: Somewhat easy to open

Explanation: Participant strongly dislikes wire-ties.

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: “I understand that a larger item would need more ties. This method of how the wire-tie was secured is ok if had to undo more.”

3. When asked how long they thought it took them to open the package, the participant answered: 0 minutes 30 seconds (Actual Time: 1 minute 2 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: “Eliminate the wire-tie and use an alternate fastener.”

Package 2: Paper-string

Comments during process:

- N/a

Observations

- Pulled away at string and corrugated backer then pulled the toy out

1. Overall Fastener Rating: Very easy to open

Explanation: “I noticed the easy open door and the string was easy to undo.”

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: “The string was easy to undo.”

3. When asked how long they thought it took them to open the package, the participant answered: 1 minute 15 seconds (Actual Time: 0 minutes 28 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: “Something on the front panel directing you to the easy open door, otherwise nothing.”

Package 3: Key-lock

Comments during process:

- N/a

Observations

- N/a

1. Overall Fastener Rating: Somewhat easy to open

Explanation: "I've seen these before but didn't know which way to turn them. (Participant didn't see the molded arrow on key-lock until after it was removed).

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: "They're fairly simple to undo."

3. When asked how long they thought it took them to open the package, the participant answered: 0 minutes 40 seconds. (Actual Time: 0 minutes 23 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: No.

Concluding Questions

When asked:

1. What is your *preferred choice* of fastener (based on this exercise), the participant answered: Key-lock.

Explanation: "It was the simplest to open."

2. What is your *2nd preferred choice* of fastener (based on this exercise), the participant answered: Paper-string.

Explanation: "It wasn't as simple as the key-lock but easier to undo than the wire-tie."

3. What is your *least preferred choice* of fastener (based on this exercise), the participant answered: Wire-tie.

Explanation: "They're a pain in general, but this process was OK because they weren't twisted."

Participant 25

Package 1: Wire-tie (improved method)

Comments during process:

- "I usually go to grab a tool before starting to open the package."
- "The way the wire-ties are looped makes this surprisingly easy to undo."

Observations

- N/a

1. Overall Fastener Rating: Somewhat easy to open

Explanation: N/a

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: "It was pretty easy to undo with the way the wire-ties were attached."

3. When asked how long they thought it took them to open the package, the participant answered: 0 minutes 45 seconds (Actual Time: 1 minute 6 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: "No wire-tie; however if it's necessary to have them make them easier to access."

Package 2: Paper-string

Comments during process:

- "This would be frustrating just because it's different."
- "This is surprisingly easy ..."

Observations

- N/a

1. Overall Fastener Rating: Some what easy to open

Explanation: "The string was easy to work with and it came out easier than the wire-tie."

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: "The string was easy to work with."

3. When asked how long they thought it took them to open the package, the participant answered: 1 minute 0 seconds. (Actual Time: 0 minutes 46 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: Include directions on how to undo the string.

Package 3: Key-lock

Comments during process:

- “This was an unfamiliar fastener...initially I wasn’t sure what to do with it”
- “If the (molded) arrow on the key-lock was a different color it would stand out”

Observations

- N/a

1. Overall Fastener Rating: Very easy to open

Explanation: N/a

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: N/a.

Explanation: N/a

3. When asked how long they thought it took them to open the package, the participant answered: 0 minutes 30 seconds (Actual Time: N/a).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: Use a different color for the arrow on key-lock.

Concluding Questions

When asked:

1. What is your *preferred choice* of fastener (based on this exercise), the participant answered: Key-lock.

Explanation: “It was the easiest. “

2. What is your *2nd preferred choice* of fastener (based on this exercise), the participant answered: Paper-string.

Explanation: “Wasn’t familiar with it at first, but it was easy to do.”

3. What is your *least preferred choice* of fastener (based on this exercise), the participant answered: Wire-tie.

Explanation: N/a

Participant 26

Package 1: Wire-tie (improved method)

Comments during process:

- “I would get tools at this point” (30 seconds into trying to open package)
- “This method was definitely easy to undo.”

Observations

- N/a

1. Overall Fastener Rating: Very easy to open

Explanation: “The wire-tie weren’t tightly wound like usual. “

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: “It wouldn’t bother me to open more, they were easy.”

3. When asked how long they thought it took them to open the package, the participant answered: 1 minute 0 seconds (Actual Time: 1 minute 28 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: No.

Package 2: Paper-string

Comments during process:

- “Oh (as if a sigh of relief due to no wire-tie) ...this is different.”

Observations

- Looked at string as if trying to figure out what to do.

1. Overall Fastener Rating: Very easy to open

Explanation: “The string was very simple to get off. It easier to remove the toy – it didn’t get stuck in the toy.”

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: “They’re easy to undo and remove.”

3. When asked how long they thought it took them to open the package, the participant answered: 1 minute 30 seconds (Actual Time: 0 minutes 47 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: No.

Package 3: Key-lock

Comments during process:

- "I don't know what to do with this ... Oh – is it a twisty?"

Observations

- N/a

1. Overall Fastener Rating: Very easy to open

Explanation: "This was easy."

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: "They're easy to undo."

3. When asked how long they thought it took them to open the package, the participant answered: 0 minutes 30 seconds. (Actual Time: 0 minutes 27 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: "If arrow on key-lock was more noticeable, otherwise no."

Concluding Questions

When asked:

1. What is your *preferred choice* of fastener (based on this exercise), the participant answered: Paper-string.

Explanation: "This was super simple – didn't know what to do initially but figured it out."

2. What is your *2nd preferred choice* of fastener (based on this exercise), the participant answered: Key-lock.

Explanation: "This was simple but this could get missed if it fell on the floor."

3. What is your *least preferred choice* of fastener (based on this exercise), the participant answered: Wire-tie.

Explanation: "This process was easy and not frustrating but would rather see something different."

Participant 27

Package 1: Wire-tie (improved method)

Comments during process:

- “These are nice ... they’re not super twisted”

Observations

- N/a

1. Overall Fastener Rating: Somewhat easy to open

Explanation: “It wasn’t hard after finding the easy open door; wire-tie was easy to undo.”

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: “More like this wouldn’t be a problem.”

3. When asked how long they thought it took them to open the package, the participant answered: 1 minute 30 seconds (Actual Time: 1 minute 28 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: “Some of the wire-tie endings were tucked under the plastic backer, the ties that weren’t were easier to grab.”

Package 2: Paper-string

Comments during process:

- “My kids like to keep the box so it’s nice that you don’t have to tear the box apart”

Observation:

- Tried to figure out how to undo the string.

1. Overall Fastener Rating: Somewhat easy to open

Explanation: Didn’t know what to do with the string initially.

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: “It wasn’t bad when figured out how to undo it.”

3. When asked how long they thought it took them to open the package, the participant answered: 0 minutes 50 seconds (Actual Time: 0 minutes 55 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: No.

Package 3: Key-lock

Comments during process:

- "I had to open these before and had a difficult time with them"
- "These were great with this package"

Observations

- N/a

1. Overall Fastener Rating: Very easy to open

Explanation: N/a

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: "They were quick and easy."

3. When asked how long they thought it took them to open the package, the participant answered: 0 minutes 25 seconds. (Actual Time: N/a).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: "Make it easier to open the easy open door, otherwise nothing."

Concluding Questions

When asked:

1. What is your *preferred choice* of fastener (based on this exercise), the participant answered: Key-lock.

Explanation: "Easiest to undo."

2. What is your *2nd preferred choice* of fastener (based on this exercise), the participant answered: Paper-string.

Explanation: "It wasn't as easy as the key-lock but was easier to work with than the wire-tie."

3. What is your *least preferred choice* of fastener (based on this exercise), the participant answered: Wire-tie.

Explanation: "It seemed to be the most time consuming."

Participant 28

Package 1: Wire-tie (improved method)

Comments during process:

- “I like that you just unwind them around the black thing (plastic cleat).”
- “I like this is process...its quick.”

Observations

- Looked frustrated at first glance of the wire-tie but looked relieved after starting the process of removing them.

1. Overall Fastener Rating: Very easy to open

Explanation: “Outside of issues with the tape the wire-tie was easy to undo and remove from the toy. There were only 2 ties.”

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: “They were pretty easy to undo.”

3. When asked how long they thought it took them to open the package, the participant answered: 2 minutes 0 seconds (Actual Time: 1 minute 40 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered:” Make it easier to get through the tape, otherwise no.”

Package 2: Paper-string

Comments during process:

- “I never saw this before – this is pretty easy.”
- “The string removed from the toy easier then the wire-tie.”
- “There’s no tugging needed to remove the toy (after the string is unfastened).”

Observations

- Tried to figure out how to undo string at first glance.

1. Overall Fastener Rating: Very easy to open

Explanation: “String was easy to undo and remove from the product; no extra plastic pieces left behind.”

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: Easy Process

3. When asked how long they thought it took them to open the package, the participant answered: 1 minute 30 seconds (Actual Time: N/a).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: No.

Package 3: Key-lock

Comments during process:

- “That was extremely easy.”

Observations

- Tried to figure out how to unfasten key-lock; looked amazed at how easy it was to unfasten.

- Didn't notice molded arrow on key-lock until after it was removed.

1. Overall Fastener Rating: Very easy to open

Explanation: “Just a quick turn.”

2. When asked if the overall rating would change if there were more fasteners to undo (larger package) the participant answered: No.

Explanation: “They're easy to undo.”

3. When asked how long they thought it took them to open the package, the participant answered: <1 minute 0 seconds (Actual Time: 0 minutes 23 seconds).

4. When asked if there was anything that could have made this process easier (in relation to the package fastener) the participant answered: No.

Concluding Questions

When asked:

1. What is your *preferred choice* of fastener (based on this exercise), the participant answered: Paper-string.

Explanation: “No extra plastic pieces; can be thrown out or recycled; not worried about safety issues (if child were to pick it up).”

2. What is your *2nd preferred choice* of fastener (based on this exercise), the participant answered: Key-lock.

Explanation: “Very easy; key-lock doesn't just fall out when it's unfastened – it remains in position.”

3. What is your *least preferred choice* of fastener (based on this exercise), the participant answered: Wire-tie.

Explanation: “Not as easy as the key-lock and string.”