SUMMARY OF THE FINDINGS

The central aim of this dissertation was to examine the uses and effects of different types of interactive features\(^1\) that are placed in digital magazines. Specifically, the experimental studies conducted for this dissertation examined (RQ1-2) how consumers respond to the presence of interactive features in digital magazines (i.e., do they like their presence? Do they use them?); (RQ3) which effects these interactive features have on consumers’ attitudes towards the content in which they are placed (i.e., editorial content or advertisements); (RQ4) the processes that underlie the effects of interactive features; (RQ5) how use of the features (vs. passively observing them) affects the effects of interactive features; and (RQ6) whether and how different types of interactive features have different effects. Based on the outcomes of the studies, six conclusions can be drawn (for a visualization, see Figure 1):

![Diagram](image)

**Figure 1. The impact of the inclusion of interactive features in digital magazines visualized.**

*Note. Use = Use of the interactive features. The dashed arrows show that the effects through perceived interactivity and perceived surprise are significantly stronger when consumers have actually used the interactive features (vs. only having seen).*

1. **Consumers are positive about the presence of interactive features in digital magazines**

Regarding Research Question 1, this dissertation shows that consumers like interactive features in digital magazines. Specifically, Chapter 4 demonstrates that people exposed to an interactive feature in a digital magazine content are generally quite positive about the feature’s presence. This finding is in line with the results reported by Consterdine (2014),

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\(^1\) Included in the studies were medium interactive features (an interactive movie clip feature), external communication features (a Facebook button, a Share button, and a Mail button), and internal communication features (Comment buttons, Like/Dislike buttons, Poll buttons).
who revealed that one of the main reasons for consumers to read digital magazines is because they like the interactive features that are placed in it.

2 Consumers do not use the interactive features in digital magazines very often

Regarding Research Question 2, this dissertation shows that consumers rarely use the interactive features in digital magazines. Chapter 4 reveals that only 11.1 per cent of the people exposed to an interactive feature also use it. This outcome is consistent with prior studies on online newspapers that revealed that also in the context of online newspapers consumers rarely use interactive features (Chung, 2008; Chung & Yoo, 2008). In the case of digital magazines, this limited feature use can be explained by the fact that ‘magazine reading’ is a predominately passive and lean-back behavior (Bronner & Neijens, 2006). Possibly, this ‘passive’ nature contrasts too much with the ‘active nature’ of interactive features, which might explain consumers’ low motivation to use them.

3 Enrichment with interactive features increases the attractiveness of digital magazine content

Regarding Research Question 3, this dissertation reveals that there is a consistent positive pattern between the inclusion of interactive features in digital magazine content and consumers’ attitudes towards the content in which these features are placed (i.e., editorial content and advertisements). Chapters 2 and 3 show that consumers who are exposed to an interactive version of a digital magazine – in which external or internal communication features are included in the editorial content – evaluate the magazine (as a whole) more positively than when being confronted with a non-interactive version. Furthermore, in Chapter 4, an identical positive pattern is found, but now in the context of digital magazine advertising. More specifically, the two experiments described in this chapter reveal that if a digital magazine advertisement is enriched with a medium interactive feature, consumers evaluate both the ad and the advertised brand in a more positive way. This shows that consumers evaluate digital magazine content more positively when it is enriched with interactive features. This outcome is consistent with the findings of previous studies on other types of digital media (e.g., websites, digital TV, and online newspapers) that also found that the inclusion of interactive features leads to more positive content evaluations (Cauberghe & De Pelsmacker, 2010; Yang & Shen, 2018; Yoo, 2011).
4 Perceived interactivity, social presence, and perceived surprise mediate the relationship between feature presence and consumers’ attitudinal responses

Regarding Research Question 4, this dissertation demonstrates that there are three psychological processes that can be activated by the presence of an interactive feature: (a) perceived interactivity, (b) social presence, and (c) perceived surprise. Each of these processes – when activated – has a positive influence on consumers’ attitudinal responses. However, not every interactive feature activates the same underlying processes (e.g., social presence was only activated by internal communication features), or does that to the same extent (e.g., internal communication features elicited stronger interactivity perceptions than external communication features; see Conclusion 5 for more details). This difference in the activation of the underlying processes explains why different forms of interactive features have their own unique impact on consumers’ attitudinal responses. In addition, by examining perceived interactivity, social presence, and perceived surprise as underlying processes (see Figure 1), this dissertation answers directly to the call for more research that investigates why different types of interactive features generate different interactivity effects (Voorveld, Neijens, & Smit, 2011). In the following, the conclusions with regard to the three underlying processes are described in detail.

A. Perceived interactivity mediates the effects of medium interactive features, external communication features, and internal communication features on consumers’ attitudinal responses

Perceived interactivity is the degree to which consumers perceive a specific piece of content as truly interactive (Bucy & Tao, 2007; Yang & Shen, 2018). In line with the findings of Wu (2005) and Song and Bucy (2008), the outcomes of Chapters 2 to 4 reveal that perceived interactivity mediates the relationship between the presence of interactive features and consumers’ attitudinal responses. This means that when interactive features increase consumers’ interactivity perceptions, this subsequently translates into more positive content evaluations – which is the case for the interactive features tested in this dissertation (see Figure 1). Furthermore, this dissertation extends previous research on perceived interactivity (e.g., Sundar & Kim, 2005; Tan, Brown, & Pope, 2019) by also examining why an increase in interactivity perceptions leads to more positive attitudinal responses. To do so, Chapter 3 examines two potential underlying mechanisms that were suggested by the literature, namely flow experience (Hoffman & Novak, 1996; Van Noort, Voorveld, & Van Reijmersdal, 2012) and perceived enjoyment (Cyr, Head, & Ivanov, 2009). The outcomes of this chapter show that when consumers read a digital magazine that they perceive as highly interactive, they become more absorbed by it (i.e., feelings of flow) and evaluate their experience with the magazine as more enjoyable, which ultimately translates into more positive attitudes...
towards the magazine (see Figure 1). This indicates that both flow experience and perceived enjoyment are mechanisms that explain the positive effects of perceived interactivity on consumers’ attitudinal responses. With this finding, this dissertation contributes to the literature on flow and enjoyment (e.g., Hoffman & Novak, 1996; Cyr, et al., 2009) by revealing that feelings of flow and enjoyment can be improved through the inclusion of interactive features in digital content (here: a digital magazine).

B. Social presence mediates the effects of internal communication features on consumers’ attitudinal responses

Social presence reflects the extent to which a user experiences the presence of others within a mediated environment (Eastin, 2006; Gefen & Straub, 2003). In the context of digital magazines, Chapter 2 reveals that internal communication features have the ability to elicit such feelings: They make people aware of the virtual presence of others within a digital magazine. Subsequently, Chapter 2 shows that by becoming aware of each other’s presence, people feel more strongly connected to the magazine’s reader community, which ultimately translates into more positive digital magazine attitudes. Thus, internal communication features enhance feelings of social presence, which leads to stronger community feelings, and ultimately, to more positive attitudinal responses (see Figure 1). With this finding, this dissertation contributes to the literature on social presence (e.g., Bente, Rüggenberg, Krämer, & Eschenburg, 2008; Kruikemeier, 2014), by empirically demonstrating that feelings of social presence can increase feelings of community among the users of a digital platform.

C. Perceived surprise mediates the effects of medium interactive features on consumers’ attitudinal responses

Surprise is a neutral and short-lived sensation that arises when consumers are exposed to something unexpected (Alden, Mukherjee, & Hoyer 2000; Meyer, Niepel, Rudolph, & Schützwohl, 1991). In this dissertation, it was assumed that the presence of interactive features in digital magazine advertisements could elicit feelings of surprise, as most of these advertisements currently do not contain any form of interactivity. Support for this assumption is delivered by Chapter 4: Advertisements that are enriched with (vs. without) a medium interactive feature are perceived as more surprising, which subsequently leads to more positive ad and brand attitudes (see Figure 1).

The findings of Chapter 4 contribute to the debate about whether perceived interactivity effects are not mainly driven by a novelty effect (e.g., Voorveld, et al., 2011). Specifically, the findings reveal that the relationship between feature presence and consumers’ attitudinal responses is mediated, independently, by both perceived surprise and perceived interactivity. This outcome supports the idea of Voorveld and colleagues
(2011) that interactivity effects might become weaker over time (e.g., when consumers are no longer surprised by the presence of interactive features). Nevertheless, it also shows that the effects will not completely wear as long as other pathways remain activated, like the one through perceived interactivity. These findings provide some first evidence that perceived interactivity and perceived surprise should be treated as separate constructs, but more research is needed to examine how these processes interact over a longer period of time (see: “Limitations and Suggestions for Future Research”).

5 When consumers actually use (vs. passively observe) the interactive features placed in a digital magazine, interactivity effects through perceived interactivity and perceived surprise become stronger

Regarding Research Question 5, the results of this dissertation show that the explanatory power of perceived interactivity and perceived surprise can be even more pronounced when consumers use the interactive features that are implemented. Specifically, Chapter 4 demonstrates that when consumers use an interactive feature that is placed in a digital magazine, evaluate the content as more interactive and more surprising than those who have only seen the feature. Subsequently, these increased perceptions of interactivity and surprise lead to more positive attitudinal responses. With this finding, this dissertation supports and extends the Dual-Process Model of Interactivity Effects developed by Liu & Shrum (2009). According to this model, interactive features can improve consumers’ attitudinal responses in two ways: (1) If consumers use them, they will experience the true benefits of these features by processing them in a central way; (2) if they do not use them, they will perceive their presence as a positive peripheral cue. This dissertation provides empirical support for the Dual-Process Model by showing that interactive features can indeed improve consumers’ attitudinal responses either directly (when being used) or indirectly (when being passively observed). In addition, this dissertation makes a contribution to this model by revealing that, although the mere presence of interactive features is already enough to improve attitudinal responses, the strongest effects are realized when consumers also use them.

6 A distinction needs to be made between external and internal communication features, as they elicit differential interactivity effects

Regarding Research Question 6, the findings of this dissertation demonstrate the necessity to make a distinction between two forms of human interactive features (i.e., features that facilitate social interactions between human beings; Boczkowski & Mitchelstein, 2012; Chung, 2008), namely external and internal communication features. This distinction is based on the fact that these features facilitate social interactions in different locations. Specifically, in the case of external communication features, all social interactions occur on external platforms (e.g., Facebook), whereas in the case of internal communication
features, all human interactivity takes place within the digital magazine itself. The results of this dissertation show that this difference in location leads to substantial differences in consumer responses. First of all, Chapter 2 reveals that only internal communication features elicit feelings of social presence, whereas external communication features do not. This finding can be explained by the fact that only internal communication features are able to transmit social cues that reveal the presence of others within a digital magazine (e.g., when consumers read other people's comments), whereas external communication features cannot, as all their social interactions occur outside the digital magazine (e.g., on Facebook). Secondly, Chapter 2 also demonstrates that, due to these stronger feelings of social presence, people feel more strongly connected to the magazine's reader community. Lastly, Chapter 3 shows that, although both external and internal communication features improve consumers' attitudes towards the digital magazine through the activation of perceived interactivity, the effects are significantly stronger in the case of the internal communication features. An explanation for this might be that, in the case of the external communication features, consumers do not ascribe all the elicited interactivity perceptions to the digital magazine itself, but also ascribe a part of these perceptions to the external platforms on which the social interactions take place.

Hence, these differences in interactivity effects emphasize the necessity to make a distinction between external communication features and internal communication features. With this finding, this dissertation contributes to the development of a more comprehensive typology of interactive features. In previous studies, several categorizations have already been proposed (e.g., Chung, 2008; Chung & Yoo, 2008; Deuze, 2003; Liu & Shrum, 2002). Although there is still no consensus on this matter, researchers do agree that one category needs to be dedicated to human interactive features. This dissertation extends this knowledge by revealing that this category needs to be further subdivided into two smaller categories, namely external communication features and internal communication features.

**GENERAL DISCUSSION**

**Time to reflect: To what extent do interactivity effects differ between digital magazines and other types of digital media?**

In previous research the effects of the inclusion of interactive features on consumers' attitudinal responses has been examined in a variety of digital media, like digital TV (Cauberghe & De Pelsmacker, 2010), websites (Van Noort, et al., 2012), online newspapers (Yoo, 2011), and mobile phone apps (Gao, Rau, & Salvendy, 2009) and placed in different types of content, like editorial content (Ahn, Hong, & Pedersen, 2014), advertisements (Sundar & Kim, 2005), and e-learning environments (Rodríguez-Ardura & Meseguer-Artola, 2016). Despite this abundance of research on interactivity effects it was unknown whether
these effects also apply to digital magazines, as these magazines differ from previously studied digital media in a number of ways that might influence the processing and effects of interactive features. Firstly, research has shown that digital replicas of print media are read differently than websites due to their stronger ‘page-turning’ feel and their fewer interactive navigation possibilities (Consterdine, 2014; Kruikemeier, Lecheler, & Boyer, 2018; Neijens & Voorveld, 2018). For example, consumers read a digital replica of newspaper in a more linear (from beginning to end) and less fragmented way than the newspaper’s website. Secondly, compared to digital TV (e.g., Cauberghe & De Pelsmacker, 2010), the content of digital magazines is presented in a different modality: The content of digital TV is mostly audiovisual, whereas the content of digital magazines is mainly static text and pictures. Due to the static content of magazines (i.e., containing no sound effects or flashing images) magazines are often read when people want to have a quiet moment (FIPP, 2017). It is therefore imaginable that digital magazine readers can become frustrated when they are confronted with interactive features in different modalities (e.g., an interactive movie clip feature), as the activation of sound or audiovisual content might disturb this moment of serenity. Thirdly, since ‘magazine reading’ is a predominately passive and lean-back behavior (Consterdine, 2014; Bronner & Neijens, 2006), this could conflict with the ‘active’ nature of the interactive features (i.e., by actively using the features consumers can profit from their benefits). Consequently, people could evaluate these features in digital magazines as out-of-place, which could cause irritation.

Despite the above-mentioned differences, this dissertation reveals that the interactivity effects found for digital magazines are comparable to those found for other types of digital media. Specifically, in line with the findings of earlier studies (e.g., Cauberghe & De Pelsmacker, 2010; Sundar & Kim, 2005; Yang & Shen, 2018), this dissertation shows that the inclusion of interactive features leads to more positive attitudinal responses. However, some studies have revealed that an increase in interactive features does not always translate into more positive attitudinal responses (Bezjian-Avery, Calder, & Iacobucci, 1998; Sundar, Kalyanaraman, & Brown, 2003). This difference in effect can be explained by the mediating role of perceived interactivity (Song & Bucy, 2008; Wu, 2005). Specifically, research in the context of websites has shown that some interactive features elicit stronger interactivity perceptions than others (Lee, Lee, Kim, & Stout, 2002; Voorveld, et al., 2011) and that perceived interactivity mediates the effects on consumers’ attitudinal responses (Song & Bucy, 2008; Wu, 2005). This means that if interactive features are not able to increase consumers’ interactivity perceptions consumers’ attitudes will not be affected either. This dissertation provides additional evidence for this mediating pathway, but now in the context of digital magazines: Some interactive features were perceived as more interactive than others (see Conclusion 6), which translated into more positive attitudinal responses. So, this shows that it is not only about the number of interactive features, but also about the features ‘ability to increase consumers’ interactivity perceptions’ that affects consumers’
attitudinal responses.

In sum, it seems that, although there are substantial differences between different forms of digital media, interactivity effects appear to be universal: Consumers evaluate digital content more positively when it is enriched with interactive features that increase consumers’ interactivity perceptions. This would also mean that the underlying processes found in this dissertation can explain the interactivity effects found for other types of digital media. Thus, the insights of this dissertation are not only relevant for digital magazines in particular, but for digital media in general.

**Methodological implications**

The findings of this dissertation make two methodological contributions to the interactivity literature. First, the successful execution of a longitudinal field experiment (described in Chapters 3 and 4) demonstrates that interactivity effects can also be examined in a real-life setting, whereas previous studies mainly used lab or online experiments with forced-exposure. An advantage of examining interactivity effects in a real-life setting is that higher external and ecological validity can be reached. The importance of this is clearly shown in Chapter 4, in which the findings of an online experiment and a field experiment are compared. The online experiment shows that consumers who actually use an interactive feature develop more positive attitudinal responses than those who only passively observe it. Yet, the findings of the field experiment show that, in real life, consumers rarely seize the opportunity to do so, which sets the results of forced-exposure experiments in a certain perspective: Although ‘use’ of an interactive feature generates the strongest effects, in reality – in an unforced context – this situation will not occur very often. Therefore, to gain the most complete understanding of consumers’ responses towards interactivity, future research should examine interactivity effects not only with forced exposure methods (i.e., lab or online experiments), but also in real-life settings using field experiments.

Second, this dissertation shows the importance of using in-app analytics when testing the influence of interactive features in digital media. These in-app analytics are data trackers that facilitate unobtrusive and precise registration of all the activities that are performed by users within a certain digital medium, like a digital magazine. These insights are not only valuable in themselves (e.g., they show exactly how people use a digital magazine), but they can also be used to increase the validity of self-reports and to check whether subjects adhere to the instructions in experimental studies. For example, the in-app analytics in Chapter 4 revealed that 52 participants had to be excluded from the final research sample because, in contrast to what they had reported, they had not followed the study’s research instructions (i.e., they had not installed and/or used the digital magazine app). Without the in-app analytics, these participants might have had a substantial impact on the study’s

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2 Of the online experiment
findings, as they comprised nearly a fourth of the original research sample. It is therefore recommended to use in-app analytics, or other behavioral measures, to increase the reliability and validity of the research findings in future research.

Limitations and suggestions for future research
Although this dissertation makes several valuable contributions to the existing literature on digital magazines and online advertising, it is not without limitations. Below, four fields of research are discussed that need further examination.

Longitudinal effects of interactive features
The first area that needs more examination is whether the interactivity effects through perceived interactivity, social presence, and perceived surprise persist over time or if there are psychological processes (e.g., perceived boredom, experienced negative feedback) that may hamper these effects. In the case of social presence it can be argued that interactivity effects through this process will become stronger over time. This is because the more often consumers are exposed to social interactions between magazine readers (facilitated by internal communication features), the more they become aware of the presence of other readers within the digital magazine (i.e., feelings of social presence). Subsequently, as a result of these increased feelings of social presence, feelings of connectedness with the magazine’s reader community may also grow, which ultimately translates into more positive attitudinal responses. In the case of perceived surprise, the opposite effect could be expected: When consumers become familiar with the implemented interactive features, they will no longer perceive the features as surprising, or to a lesser extent, which may eventually lead to the disappearance of the perceived surprise pathway. More research is therefore needed to examine the strength and the duration of the interactivity effects through perceived interactivity, social presence, and perceived surprise for a longer period of time. Besides, it is also imaginable that other underlying processes may play a role over time. Examples of such processes may include: perceived boredom (Berge, 1999), received negative feedback (e.g., received from the online social interactions; Koutamanis, Vossen, & Valkenburg, 2015), and experienced cognitive load (e.g., when consumers become more experienced with the interactive features, less cognitive load is required to use them; Schwan & Riempp, 2004). Future studies should therefore not only examine the longitudinal interactivity effects through perceived interactivity, social presence, and perceived surprise but also investigate the influence of other processes that can be activated over time.

Differences in visibility and modality
The second area that needs more examination is whether and how differences between interactive features affect consumers’ attitudinal responses. In this dissertation, three types
of interactive features are identified and tested for their differential impact on consumers’ attitudinal responses, namely: external communication features, internal communication features, and medium interactive features. However, there are also other aspects on which interactive features can differ from each other, such as visibility and modality. In the case of the former, some interactive features have a stronger attention-grabbing ability than others. For example, hyperlinks are mostly quite small and somewhat hidden in the text, whereas an interactive movie clip feature can easily cover half a page in a magazine and also has more visual cues to attract people’s attention (e.g., a screenshot of the movie clip and a play button). Furthermore, interactive features can differ in modality: Some interactive features comprise only text (e.g., hyperlinks), whereas others activate audiovisual content (e.g., an interactive movie clip feature; Oh & Sundar, 2015). Additional research is needed to examine the impact of these differences in visibility and modality on consumers’ attitudinal responses.

**Composition of the interactive features**

The third area that needs more examination is what the most ideal composition is of interactive features in a digital magazine (i.e., the number and mix of different types of interactive features). Prior research has predominately revealed that an increase in the number of interactive features generates more positive consumer responses (e.g., Brown, 2002; Sundar & Kim, 2005). However, some researchers claim that the placement of too many interactive features could backfire and lead to negative outcomes, like frustration and information overload (Bucy, 2004; Sundar, et al., 2003; Yang & Shen, 2018). For example, Sundar, et al. (2003) found that a highly interactive website elicited less favorable consumer responses than when a moderate interactive version of the website was used. More research is therefore needed to determine what the most optimal level of interactivity is within the context of digital magazines (i.e., how many interactive features need to be implemented? What is the most ideal mix of different types of interactive features?)

**Natural versus forced use of the interactive features**

The final area that needs more examination is whether there are any differences in effect when consumers use the interactive features according to their own needs (i.e., natural use) versus when they use them because they are instructed to do so (i.e., forced use). For example, in Chapter 4, feature use was manipulated by explicitly asking people to click on (vs. passively observing) an interactive movie clip feature that was placed in a digital magazine advertisement. Findings revealed that actual ‘use’ of the interactive feature generated more positive attitudinal responses than when consumers had only passively observed the feature. However, it is plausible that the effects of ‘use’ would have been stronger if consumers also had an intrinsic motivation to use this feature (e.g., looking for information, entertainment; Yoo, 2011), because in that case people are genuinely
interested in the feature’s benefits for the fulfillment of their own personal needs. Hence, more research is required to get a better understanding of the differential effects of ‘natural’ versus ‘forced’ use of interactive features.

**Practical implications**

This dissertation provides several insights that are relevant for digital magazine publishers as well as for online advertisers. First, this dissertation shows that publishers of digital magazines do not have to worry that consumers will consider the implemented interactive features as inappropriate or as irritating, which may harm consumers’ magazine experiences. In fact, the opposite is true: Even though consumers do not use the interactive features in digital magazines very often they still like their presence in the magazine content. Furthermore, consumers develop more positive attitudes towards the magazine content in which they are placed (editorial content or advertisements). This dissertation therefore recommends that digital magazine publishers and online advertisers enrich their (mostly static) content with interactive features, as this leads to increased persuasive effects, such as more positive magazine attitudes, ad attitudes, and brand attitudes. However, it should be noted that we do not yet know everything about the effectiveness of interactive features in digital magazines (e.g., what are the longitudinal effects? What is the most ideal level is of interactivity?). It is therefore recommended to always pretest the impact of interactive features beforehand and, if interactive features are used for a longer period of time, to also check regularly whether they still achieve the desired effects.

Second, this dissertation demonstrates that although both external and internal communication features have a positive impact on consumers’ attitudinal responses, internal communication features are the most beneficial. This is because internal communication features have the ability to activate two pathways through which consumers’ attitudinal responses can be positively affected (via perceived interactivity and social presence), whereas external communication features can activate only one (via perceived interactivity). Consequently, the sum of two pathways generates stronger persuasive effects than when only one is activated. Besides, it also guarantees that if one of the pathways wears out, consumers’ attitudinal responses will still be positively affected through the other one. Furthermore, since internal communication features make readers more aware of each other’s presence within a digital magazine (i.e., feelings of social presence), readers also develop stronger ties with the magazine’s reader community. So, if a choice needs to be made, it is recommended to choose internal communication features over external communication features, as the former generates the strongest and most diverse persuasive effects.

Third, this dissertation shows that although the mere presence of interactive features is already enough to improve consumers’ attitudes towards the content in which they are placed, the effects are substantially stronger when consumers have also used these features.
Since consumers often do not use the features spontaneously it could be profitable to give them a small incentive when they do use the implemented interactive features. For example, a reward could be given for the best ‘user comment’ placed in a digital magazine: The winner could be rewarded with some extra attention (e.g., there can be a “Comment of the month” section in the magazine) combined with a small gift (e.g., an access code for a free issue). The use of incentives could be especially valuable for new magazine readers: This will motivate them to use the implemented interactive features, learn quickly how they work, and experience what the benefits of these features are. In addition, it is imaginable that when consumers have actually experienced the benefits of the features they are more likely to use them spontaneously and, at some point, incentives may no longer be needed (or can be smaller).
LITERATURE


Chapter 5


Liu, Y., & Shrum, L. J. (2002). What is interactivity and is it always such a good thing? Implications of definition, person, and situation for the influence of interactivity on advertising effectiveness. *Journal of Advertising, 31*(4), 53-64. doi:10.2753/JOA0091-3367380204


