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#Muslim?
Instagram, Visual Culture and the Mediatization of Muslim Religiosity

Explorative analysis of visual and semantic content on Instagram

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Please cite as:

Frissen, T., Ichau, E., Boghe, K., & d'Haenens, L. (2017) #Muslims? Instagram, Visual Culture and the Mediatization of Muslim religiosity. Explorative analysis of visual and semantic content on Instagram. In: Kayıkcı, M. & d'Haenens, L. (Eds.), European Muslims and New Media. Leuven: Leuven University Press.

Introduction

"Haraam
This new epidemic where muslim sisters are posting pictures online;
while the brothers are commenting Ma'sha'Allah.
Let's not get it twisted this is haraam" [sic].

(Anonymous Instagram user)

The abovementioned quote was posted on Instagram on March 6th, 2017. This seems to be a meaningful post in many ways. First, it does not only comply to what later will appear as the leading type of Instagram content, it also emphasizes the notion that new media and visual culture might exercise pressure on religious representations in general, and on Muslim religiosity in particular. The poster expresses serious concerns about the ways in which online media facilitate, shape, or even contaminate—using words like 'epidemic'—specific unreligious behaviors. Hereby, he or she contrasts fundamental Islamic concepts, i.e. 'Haram', with more contemporary tendencies of Muslim women sharing their religious identity online and the way that Muslim men encourage that behavior. The poster hereby points to the colliding values between an apparent online visual culture and a broader religious context it refers to: i.e. what we will call later a 'field of tension' between the representation of religious experience on the one hand, and religion itself on the other.

The text in this post forms a common thread throughout the current chapter, discussing our quantitative explorative analysis of the visual and semantic representations of Islam and Muslim religiosity on Instagram.

Literature review

The proliferation of social media has fed the rapid expansion of what some have called a 'virtual *umma*' (El-Nawawy and Khamis 2010), or a transnational Islamic public sphere (Allievi 2003; Anderson 2003). Blurring the lines between representation, participation and reception, social media have provided Muslims worldwide with spaces and tools for self-definition and community building (Eckert and Chadha 2013; Harris and Roose 2014; Kavakci and Kraeplin 2016; Mosemghvdlishvili and Jansz 2013). The purpose of this chapter is to explore visual (self-) representations of Islam and Muslim religiosity in online social networks, with a focus on the leading image-sharing platform Instagram.

A recent report by the Pew Research Center shows that in 2016 Instagram was the second most dominant online social network in young people's everyday life (Greenwood et al. 2016), with over 500 million active users and 95 million posts every day (Parker 2016). As an image-focused platform, Instagram functions as a visualization of everyday life, culture, spirituality, and existence. Borrowing from Foucault, Rocamora (2011) writes that, by fusing old – photography – and new – digital media– 'technologies of the self', image-oriented social networking sites facilitate self-expression and online identity construction. In a context of 'digitalization of religion' (Campbell 2013) one can raise the question of how religious identities are visualized on social networking platforms. Moreover, the body of literature on media representations of Islam and Muslims (for an overview, see Ahmed and Matthes 2016) has largely overlooked visual representations and new media content. To our knowledge no empirical studies exist on Muslims' Instagram practices and representations. To theorize social media visualizations of Islam and Muslim religiosity we therefore draw on research in the fields of (1) Muslims' social media practices (with a focus on blogging) and (2) the mediatization of religion.

Muslims' social media practices

boyd (2007: 129) writes that social networking sites provide people with spaces for "writing identity and community into being." This is of particular significance for groups that have traditionally been denied self-definition and self-expression in the public sphere. While mainstream media in western countries have a history of misrepresenting and marginalising Islam and Muslims (e.g. Hafez 2000; Ibrahim 2010; Ichau and d'Haenens 2016; Kumar 2010; Moore *et al.* 2008; Poole 2002; Powell 2011; Richardson 2004; Shaw 2012; Törnberg and Törnberg 2016),

the proliferation of social networking sites has provided Muslims worldwide, both in Islamic countries and in diasporic communities, with spaces to articulate their own identities and present their own perspectives. New media technologies have also facilitated the development of communities transcending geographical and physical constraints.

A look at the literature suggests that fears for jihadist recruitment of young Muslims in western societies are the driving force behind a lot of recent research on Muslims' online practices (e.g. Gates and Podder 2015; Klausen 2015; see also chapter 8 by Carvalho in this volume). Other authors, however, have emphasized the role of social media in self-expression and self-definition, community building (Brouwer 2004; Eckert and Chadha 2013; Kavakci and Kraeplin 2016; McKelvy and Chatterjee 2016; Mosemghvdlishvili and Jansz 2013), civic engagement (Eckert and Chadha 2013; Harris and Roose 2014; Johns 2014) and social and political mobilization (e.g. Eltantawy and Wiest 2011; Halverson et al. 2013; Lotan et al. 2011; Rane and Salem 2012).

It should be pointed out that a great deal of the existing research in this field, including the present study, is embedded in an occidental academic tradition that features Islam and Muslims as objects of research and representations, from a non-Islamic perspective. Much of the literature has focused on the experiences of Muslims living in western countries (e.g. Eckert and Chadha 2013; Harris and Roose 2014; McKelvy and Chatterjee 2016). Eckert and Chadha (2013) refer to them as 'emerging counterpublics', alternative voices that actively participate in the national public debate and challenge mainstream discourses. Muslims appear in this literature as religious and ethnic minorities within western (host-)societies, and their (social) media output is analysed from that perspective, with a focus on issues of integration, representation and hybrid identities.

Social interaction is a primary motivation for people to turn to Instagram (Lee *et al.* 2015). For Muslim minority youth in western societies, social networking sites are important tools to connect with other Muslims. Online relationships and dialogue with individuals facing similar challenges in terms of identity and representation can be sources of support and social recognition, particularly for members of groups experiencing discrimination and hostility in their everyday lives (Brouwer 2004; Eckert and Chadha 2013; Harris and Roose 2013; McKelvy and Chatterjee 2016). Generally speaking it can be argued that social networking sites facilitate community building beyond real-world constraints. Besides connecting with other Muslims, interaction with the larger community and building relationships beyond Muslim communities compensate for a lack of offline contact (McKelvy and Chatterjee 2016; Mosemghvdlishvili and Jansz 2013), and

are crucial for Muslims to have their voices heard (Eckert and Chadha 2013; Harris and Roose 2014).

However, Instagram is primarily a platform for self-(re)presentation (Lee *et al.* 2015). Recent qualitative interview studies from Germany and Australia found self-expression and self-representation to be key motivations for diasporic Muslim youth to engage in blogging and online discussions (Eckert and Chadha 2013; Harris and Roose 2014). Eckert and Chadha (2013: 932) write that blogging offers young Muslims "the opportunity to engage in a process of self-representation that was denied to them as a marginalized group within the (German) public sphere." The expression of hybrid identities is crucial here. By simply enabling them to articulate complex identities, their blogs allow young Muslims to nuance or complement mainstream narratives that misrepresent them as a homogeneous group (Eckert and Chadha 2013; Harris and Roose 2014).

For some authors, all Muslims' online practices, including 'ordinary' posting about everyday life, are expressions of today's Islamic identity (Harris and Roose 2014). With regard to gender relations, Rocamora (2011) argues that taking control of one's own visual representation is an act of empowerment.

'Social-mediatized' religious practice?

Noteworthy in this regard are Muslim fashion and lifestyle bloggers, also known as 'hijabistas' (an amalgamate of 'hijabi' and 'fashionista') or 'mipsters' (from 'Muslim' and 'hipster') (Kavakci and Kraeplin 2016; Koeman 2017). While explicitly identifying as Muslims, these young women rearticulate the rules of modesty of Islamic female dress code, fusing traditional religious clothing, such as the hijab, and fashionable 'western' garments. Some of them have become transnational 'microcelebrities' with hundreds of thousands of followers worldwide. Islamic fashion bloggers in a diasporic context form alternative voices in national/European debates about religious clothing in the public sphere (Harris and Roose 2014).

Religious social media practices can be seen as a convergence of traditional religious representation and 21st-century popular culture (Cheong *et al.* 2008; Kavakci and Kraeplin 2016). According to the theory of mediatization, media are "integrated into the operations of other social institutions, while they have also acquired the status of social institutions in their own right"

(Hjarvard 2008: 113). Kavakci and Kraeplin (2016) use the mediatization perspective to analyze three leading hijabistas' social media accounts, and argue that *islamofashionista* culture has given rise to new religious behaviours and experiences that are in conflict with traditional representation. Campbell and Connelly (2015) describe a dialectic relationship between 'new media' and religious practice, characterized by mutual interplay. According to Hjarvard (2011) three processes characterize the mediatization of religion: (1) media become primary sources of information and discussion about religion; (2) the features of media genres influence religious experience and practice; (3) social and cultural functions of religious institutions are transferred to media. Along similar lines, El-Nawawy and Khamis (2010) speak of a 'mediatization of tradition'.

Methodological background

The current study aims to explore the visual representations of Islam and Muslim religiosity in online social networks. More specifically, this study sets out to reveal and understand thematic and symbolic imagery associated with Islam and Muslims within an online visual culture. We concentrated on the case of Instagram, today's most popular online photo-sharing platform, focusing on visual rather than textual communication. As an image-focused platform, Instagram functions as a visualization of everyday life, culture, spirituality, and existence. Several recent studies discuss the significance of an online visual culture, embodied by a medium such as Instagram, in cases such as community building (Mccormack 2017), political and religious mobilization (Russmann and Svensson 2016), (national) identity formation and belonging (Becker 2016), and (sexual) self-representation (Raun 2016). The central argument made in these studies is that the mediated communication itself shapes, and is being shaped by, the experience of everyday life and culture (cfr. Hepp 2011; Hjarvard 2008). Specifically, from a *mediatization* perspective, this reasoning follows Hepp's (2009; 2011) logic of the *molding forces of the media* which describes that it is the nature of a specific medium that exercises a pressure in the way we communicate and perceive reality. And, given the contemporary tendency, or pressure, to picture and/or visualize existence (Mirzoeff 1999), it seems of unmeasurable importance to explore and understand the reciprocal relation between a visual culture on Instagram and the broader everyday life and culture it may refer to. In that sense, this study sets out to explore and understand the mediatization of Muslim religiosity, by analyzing dominant visual themes and symbols associated with Islam within an online visual culture. To date, and to the best of our knowledge, no systematic

quantitative-empirical studies exist on the subject, leaving a serious gap in our understanding of the experience of mediated communication as part of Muslim religiosity. A first step in filling this gap consists of a quantitative exploration of relevant Islam-related content on Instagram, today's most popular visual culture online platform. More concretely, our central research question is as follows:

RQ: What are the dominant visual themes and symbols that are associated with Islam and Muslim religiosity in an online visual culture as embodied by Instagram?

Corpus selection

In the pursuit of answering our RQ, we divided the study in three consecutive phases. First, we started with a general screening of all Muslim and Islam related content on Instagram. To do so, we searched for a broad array of different hashtags in all publicly available posts on Instagram. Like on Twitter (Wang *et al.* 2011), a hashtag on Instagram is organically composed by the users themselves and is predominantly meant to categorize, contextualize, and/or highlight topics. This can easily be done by using the hash-sign as a prefix to a word or a sentence, such as *#love*, *#photooftheday*, or *#happy*, to name a few (*see https://top-hashtags.com/instagram for a complete overview of popular hashtags on Instagram*). The unique nature of a hashtag is that it adds metadata and classification to posts within the online platform, and it thereby allows users to find associated posts and content by filtering media content for a given hashtag. In the current study, we used the hashtag #Islam as an entry point to discover the visual culture that is associated with Islam and Muslim religiosity. We made a shortlist of the ten most frequently used hashtags that accompanied #Islam. Based on this list we eventually distilled the three most used hashtags in this arena, which were *#Islam*, *#Muslim*, and *#Allah*, with respectively N=8,931,878, N= 6,229,879, and N=5,017,743 at the start of the data collection.

In the second phase, a systematic coding tool was developed. We did this by means of an inductive explorative analysis on the content that we gathered during the preliminary screening phase. Two researchers listed independently all manifest elements, themes and symbols, and other variables that emerged from the first data screening. Ultimately, both coding schemes were combined and bundled into one coding instrument, incorporating a total of 17 unique variables. Examples of these variables are (1) image type, consisting of 9 unique categories such as 'selfie',

'cartoon' or 'video', (2) general theme, with 19 different categories, including themes like 'religious', 'fashion/outer-appearance' or 'extremist/violence', (3) Symbols usage, consisting of 16 dichotomous categories, e.g. 'hijab', 'Qur'an/Religious texts'; (4) number of likes and comments, (5) used language, and (6) co-occurring hashtags. All hashtag and symbol variables were treated as dichotomous index variables, such that each post could score '1' on multiple hashtags/symbols. Theme was treated as a mutually-exclusive variable, such that only one theme was assigned to each post.

In a third and final step we mined the final data for the study. For this we took a convenience sample of the available content that was marked with at least one of these three hashtags. In order to overcome potential collection bias due to international time zone influences, we systematically mined the 110 most recent posts for each hashtag on two different points in time on three consecutive days. Specifically, we started mining on Monday March 6th, 2017 at 9.00am (GMT+1) and 17.00 (GMT+1) and repeated the protocol on Tuesday March 7th and Wednesday March 8th, registering a total of approximately 660 posts per day. After a structural cleaning process, which entailed deleting doubles, spam, and inappropriate/pornographic content, the final dataset consisted of n=1,357 cases.

Coding, analysis & reliability

The main objective of the current study is to reveal and understand the dominant imagery associated with Islam and Muslim religiosity within online visual culture. Therefore, this section will mainly discuss the procedures used for the visual analysis, which is mainly quantitative and deductive in nature. Nevertheless, in order to put the visual data in a broader context, we supplemented our analysis with an explorative semantic examination of the most frequently used hashtags and examined to what extent they coincide. For this, we created two corpuses. First, for the quantitative deductive analyses, all visuals had to be coded manually. Therefore, we narrowed down the amount of data and took a random selection of all the images in the full dataset, resulting in a subsample of approximately half of the total of mined Instagram posts (n=666). Two independent researchers each systematically coded half of the selected images. In order to test interrater agreement and the external validity of the measurements and coding instruments, an interrater reliability test was performed on 10% of the data. The test showed a strong agreement between both coders for the focus variables of the current study, which where (1) *image type*, with

a Krippendorff's Alpha of 0.931, (2) *general theme* with Krippendorff's Alpha of 0.896, and (3) *symbols,* with an average Krippendorff's Alpha of 0.85, over 16 dichotomous variables. A correspondence analysis was performed using *R* (R Core Development Team 2013) with the *FactoMineR* package and the *CA* package.

Second, for the semantic exploration of the most prominent hashtags and the extent to which they co-occur, we used the full dataset consisting of n=1,357 Instagram posts. For each post, all its hashtags were registered in the initial data-mining phase. First, the corpus needed to be preprocessed. This means that all hashtags had to be converted to lowercase values whereby punctuation and numbers had to be removed from the labels. Additionally, all words were converted to their stem if necessary. In the end, we registered 7,548 different hashtags. Strikingly, most of these terms (68.8%, N = 5,190) only appeared once in the entire corpus. Because we were mainly interested in *how* specific hashtags cluster together with others, we performed a co-occurrence network analysis in *KH Coder*.

Results

Visual culture

In reference to our research question we first explored the dominant imagery within the online visual culture for Muslim religiosity on Instagram. We specifically looked at the core variables of this study which where (1) image type, (2) general theme, and (3) symbols. We begin this section of the chapter by discussing some descriptive statistics on these metrics. First, one of the more essential steps in making a taxonomy of the visual culture on Instagram is looking at the specific types of content. Based on our coding tool, which functioned in this phase of the research as an interpretative framework, we found 7 different image types in our dataset (see table 1). The most striking finding to emerge from the data is the strong presence of Quotes/text-type images, with

Image type	**Frequencies**	**Percentage of total**
Quote/text	254	38.1
Photograph (excl. selfie)	225	33.8
Video	79	11.9
Illustration/cartoon	21	3.2
Screenshot	15	2.3
Selfie	14	2.1
Graph/chart	1	0.2
Missing/inappropriate	*57*	*8.6*
Total	666	100,0

Table 1: Frequencies and percentages of the used image types.

almost 4 out of 10 Instagram posts being of this kind. This is specifically interesting because Instagram, an image-sharing application, appears to be predominantly used to share textual information rather than images in the context of online Muslim representation. Posts of this kind mainly contain inspirational quotes, such as Hadith passages or Qur'anic verses (see image 1 for an example). Interestingly, we found a reasonable variance in the language used in these posts. More concretely, the most used languages in our dataset were either Asian-Pacific (e.g. Indonesian/Malaysian) with 37,7% of all posts, followed by English (27,8%) and Turkish (13,7%). This distribution may not be surprising for two reasons. First, it is a given that the vast majority of the World's Muslim population lives in the Asia-Pacific region, with approximately 202.9 million self-identifying Muslims in Indonesia only (Desilver and Masci 2017). Second, Indonesia and its neighboring countries are among the fastest growing regions in the world when it comes to new

media use, with Indonesians being among the most active social media users globally (Chaffey 2017)

Figure 1Example image of an inspirational quote

Figure 2 Example image of a video featuring an Islamic scholar.

A second surprising result that can be derived from the data is the prominence of video content. Audiovisual content, rather than merely a still image, appeared to be the third most used type of content in our sample. A significant majority of these videos came from scholars/imams who provided religious contextualization or explained religious concepts (see picture 2 for an example). Perhaps less surprisingly, albeit still interesting, is the fact that the regular photograph or image (excl. selfies), appeared to be the second most used image type in our corpus. What was surprising however, was that even though this type of content could contain any of the possible symbols, it is mainly used for the representation of female Muslim symbols, such as veils and hijabs.

In order to ground these insights in more inferential statistics, and in anticipation of the discussion on symbols later on in this chapter, we performed three binary logistic regression analyses, in which we explored the likelihood that specific image types were used given the presence of different symbols. As can be seen in table 2, each of the three main image types is strongly associated with a specific set of symbols. Quotes are three times more likely (95% CI 1.647 - 5.465) to portray Qur'anic verses ($e^{\beta} = 3.000; \beta = 1.099; p<0.001;$ Nagelkerke $R^2 = 0.226$), whereas scholars/imams were 11 times more likely (95% CI 4.508 – 29.484) to be present in a video ($e^{\beta} = 11.528; \beta = 2.445; p<0.001;$ Nagelkerke $R^2 = 0.281$). Likewise, the likelihood that veils and hijabs appear in a regular photograph is about 3 times higher (95% CI 1.705 – 4.761) than in the other image types ($e^{\beta} = 2.850; \beta = 1.047; p<0.001;$ Nagelkerke $R^2 = 0.242$). Apparently, the conventional image format is specifically more important for the representation of women's religious identity, than for any other purpose, while the video format is more important for the representation of male religious identity and spirituality. With these analyses at hand, we will now focus on the dominant themes and symbols within the online visual culture for Muslim religiosity on Instagram.

	Quote	**Photo (excl. Selfie)**	**Video**
	OR (95% CI)	OR (95% CI)	OR (95% CI)
Qur'anic verses / texts	**3.000 (1.647 - 5.465)*** **	0.857 (0.451 – 1.629)	0.321 (0.099 – 1.042)
Male religious clothing	1.046 (0.482 -2.267)	0.755 (0.335 – 1.701)	**2.308*(1.036 – 5.140)**
Veils/hijabs	***0.373**(0.202 – 0.689)***	**2.850*** (1.705 – 4.761)**	1.249 (0.573 – 2.724)
Other religious clothing	***0.295***(0.173 – 0.505)***	**4.457*** (2.773 – 7. 164)**	0.690 (0.344 – 1.384)
Beards	0.820 (0.358- 1.877)	***0.252** (0.095 – 0.666)***	**2.996*(1.261 – 7.120)**
Praying	**2.357*(1.088 – 5.108)**	***0.412* (0.175 – 0.969)***	1.092 (0.349 – 3.418)

Children	0.324 (0.088 – 1.197)	0.667 (0.251 – 1.773)	**6.941***(2.524 – 19.091)**
Animals	1.575 (0.409 – 6.604)	0.537 (0.100 – 2.889)	1.322 (0.157 – 11.163)
Tawhid/pointing finger	4.263 (0.233 – 77.933)	0.000 (0.000 – 0.000)	1.729 (0.049 -61.385)
Scholars/imams	0.493 (0.169 – 1.436)	***0.277* (0.085 – 0.905)***	**11.528*** (4.508 – 29.484)**
Buildings/mosques	0.582 (0.325 – 1.040)	**2.432**(1.400 – 4.224)**	1.556 (0.697 – 3.474)
Allah sign	1.246 (0.395 – 3.937)	1.270 (0.388 – 4.155)	0.000 (0.000 – 0.000)
Landscape/nature	**2.593*** (1.607 – 4.185)**	***0.545* (0.319 – 0.932)***	1.443 (0.649 – 3.212)
Food	0.530 (0.139 – 2.026)	2.779 (0.881 – 8.770)	1.003 (0.179 – 5.606)
Weaponry	1.051 (0.224 – 4.942)	0.520 (0.095 – 2.842)	3.364 (0.598 – 18.909)
Hosmer-Lemeshow Goodness of fit: X^2 (df=7)	4.919	4.591	4.583
Omnibus test Model X^2	117.266***	124.036***	102.127***
Nagelkerke R^2	0.226	0.242	0.281

Table 2: Summary of binary logistic regression models ** p<0.05, ** p<0.001, *** p<0,000*

In table 3, the percentages of the five most recurrent themes are listed. In nearly one out of three posts the main theme of the post is religiously inspired. Examples include Qur'anic quotes, images of religious rituals, such as praying, and videos by imams/scholars.

Theme	Percentage of total
Religious	27.9
Fashion/ physical-appearance	13.4
Nature	7.1
Advertising	6.8
Art/Architecture	4.5

Table 3: Percentages of most appearing themes

This seems to follow our findings on the image types, in which religious quotes were the most prevalent. However, it seems noteworthy to remark here that, despite using clearly religiously loaded search queries (i.e. *#Islam, #Allah*, *#Muslim*), the vast majority of the sample—two thirds of all observations—are not predominantly religiously focused.

That brings us to the second most recurring theme, which are fashion/outer-appearance oriented posts (see figure 3). This category includes visuals in which mainly girls and women show traditional-religious clothing and fashionable apparel. A binary logistic regression shows that symbols such as veils and hijabs are 15 times (95% CI 8.978– 25.008) more likely to appear in this theme than in any other (e^{β} *=14.984; β=2.707; p<0.001;* Nagelkerke R^2= 0.269).

Figure 3. Example image that was coded as fashion/outer-appearance

Similarly, all symbols coded as other clothing and accessories were 13 times (95% CI 7.886–21.807) more likely to occur in this fashion/outer-appearance theme (e^{β} *=13.114;* β*=2.574;* $p<0.001$*;* Nagelkerke R^2= 0.238). Remarkably, this was not the case for male clothing and other symbols of male outer appearance, e.g. beards. These symbols held no significant relation with the fashion/outer-appearance theme, but appeared to be strongly associated with the religious theme. More specifically, in comparison to all other categories, male religious clothing was 13 times (95% CI 6.408– 26.763) more prevalent in the religiously oriented posts (e^{β} *=13.096;* β*=2.574;* $p<0.001$*;* Nagelkerke R^2= 0.228). Beards were 5 times (95% CI 2.977– 9.447) more prevalent in religiously oriented posts (e^{β} *=5.303;* β*=1.668;* $p<0.001$*;* Nagelkerke R^2= 0.114).

Based on these findings, there appears to be a fundamental gender divide between themes: posts that have religion as a general theme feature more symbols representing male apparel, while posts with fashion as a theme featured more symbols representing female apparel. These findings might indicate that the traditional overrepresentation of men in establishment positions, and the overrepresentation of women in private roles (Collins 2011), are mirrored when it comes to self-representation on Instagram. A further exploration of the association between these symbols and themes is necessary.

Then, table 4, shows the distribution of the five most frequent symbols. Even though we discussed already a few symbols in reference to specific image types and thematic genres, here we care to highlight that the two most dominant symbols are mainly associated with fashion and clothing, rather than with spiritual aspects of religion. This may seem paradoxical, given the fact that we pointed out in the discussion above that spiritual-religious quotes are the most common type of content, and religious context is the largest thematic category. However, it might be possible that clothing, veils, and hijabs are important symbols related to the consequential experience of religion, with religion and fashion as intersecting worlds.

Symbols	**Percentages of total**
Other clothing	19.46
Veils/hijab	14.23
Landscape/nature	13.83
Books / texts	8.99
Buildings/mosques	8.99

Table 4: Most frequent symbols in percentages.

Therefore, from a self-representation perspective, we need to explore this intersection more in depth. For this purpose, we chose to perform an explorative correspondence analysis (CA). Within a correspondence analysis, two categorical variables are mapped onto at least two axes in order to look into the relationships between each category of variables. This statistical method is known as a meaningful way to investigate patterns within corresponding data, and its application within (religiously inspired) media content research is not unusual (Frissen and d'Haenens 2017). In the case of the current study, our objective was to investigate how general themes (rows) correspond with the appearance of visual symbols (columns). In essence, symbols that show a greater alikeness in their appearance within a certain theme should be close to each other on the plot. Similarly, themes with similar row profiles should cluster together on the map. This results in a visual representation of at least two dimensions determined by row and column loadings that represent some underlying construct. In order to prepare the data for the analysis, we aggregated 15 index variables of *symbols* ('occurs in post'/ 'does not occur in post') to the corresponding *theme* for each post and standardized the rows to 500 in order to obtain row profiles.

A first step in this process is to investigate whether the symbols and themes are related to one another. The current data shows that this is indeed the case: the theme is significantly associated with the symbols present in the post (χ^2 (240) = 15777, $p < 0.001$). Moreover, the correlation between rows and columns is 1.36, far exceeding the 0.20 threshold used by Healey (2013: 289-290) to determine significant relationships. Therefore, a correspondence analysis is warranted. The inflection point and the average inertia rule (Lorenzo-Seva 2011: 97) were used to determine the amount of dimensions to be extracted. According to this last rule, each dimension should at least explain 7.14% variance (1/(15-1)) when looking at the symbols variable and 7.69% (1/(14-1)) when looking at the theme variable. According to both the inflection point criterion and the minimum explained variance criterion, we should opt for extracting four dimensions. Eigenvalues and explained variance are in table 5.

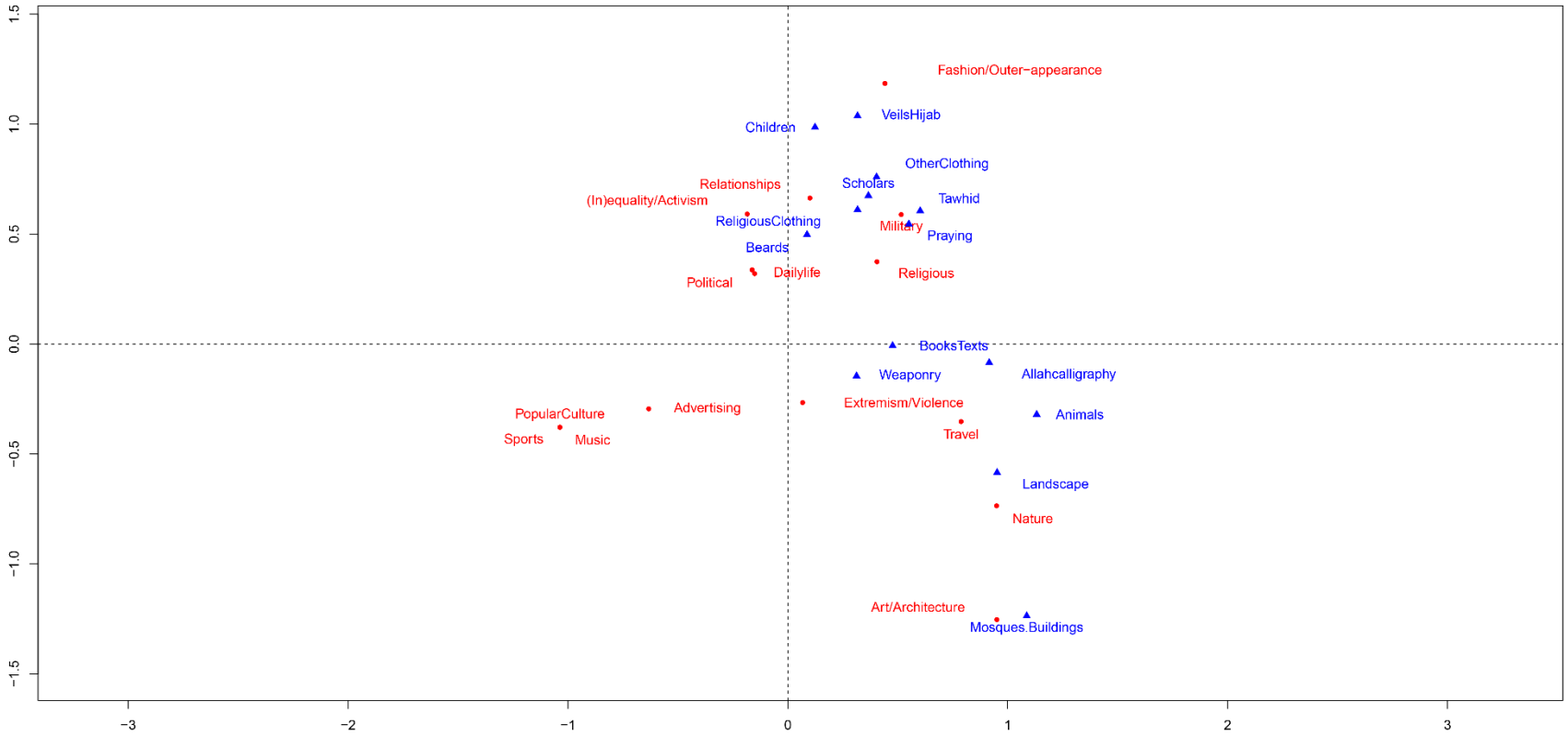
	Eigenvalue	Explained variance	Cumulative explained variance
Dimension 1	0.453	29.254%	29.254%

Dimension 2	0.382	24.667%	53.920%
Dimension 3	0.282	18.172%	72.092%
Dimension 4	0.156	10.077%	82.170%

Table 5:Extracted dimensions with eigenvalues and explained variance

In the final solution, the 'food' theme and symbol were defined as supplementary variables since these categories correlated almost perfectly and therefore dominate the dimensions. Such outlier categories should always be defined as supplementary variables (Bendixen 2003). Similarly, the category 'miscellaneous/other' was identified as a supplementary variable since the category is not meaningful and this does not add anything to the interpretation of the dimensions at hand. Figure 4 displays the first two and most significant dimensions in a symmetrical biplot. Together, these dimensions explain more than half of the total variance in themes and symbols, which makes it suitable for interpretation (Peterson 2000).

Therefore, these two dimensions are used to map the themes and symbols in a symmetrical biplot (see figure 4).



Dimension 1 (29,25%%): Non-spiritual ←→ Spiritual (X-axis)

Figure 4 *Biplot of the correspondence analysis of themes and symbols*

In the plot, the red dots mark the *themes*. The closer two themes are situated on the plot, the more they are alike when it comes to the presence of symbols; likewise, the greater the distance between two dots, the more they display comparatively different profiles. The same is true for the *symbols*—represented by the blue pyramids: the smaller the distance between any two points, the more they are alike.

Concretely, in figure 4 the two dimensions are plotted on a horizontal and a vertical axis. For exploratory interpretation purposes, it is common to label the axes in order to explain the spread of the data points. This is of course a rather subjective process. In the case of the current study, and after investigating the contributions of the different data points more in detail, we decided to treat the first dimension, the x-axis, as a semantic differential axis ranging from more non-spiritual themes to rather spiritual ones. The explanatory power of the different categories supports this interpretation with, amongst others, landscape' (20.97%) and 'nature' (15.72%) contributing significantly to the first dimension and representing the spiritual realm, while themes such as popular culture (12.30%) represent the non-spiritual realm. Thus, the further right a point is mapped on the x-axis, the more it is related to spiritual characteristics, such as 'nature', 'Allah' and 'praying'. The further left on this non spiritual-spiritual axis, the more it relates to concepts in the non-spiritual realm, such as 'music', '(in)equality/activism', and 'sports'. Furthermore, the vertical axis represents the second dimension that we labeled 'personal/the Self' at the topversus more 'impersonal/context'-thematic at the bottom.. Denoting the personal hemisphere with positive loadings, categories such as 'veils/hijab' (23.95%) and 'family/relationships' contribute significantly to the second dimension, while 'art/architecture' (19.41%) and 'mosques/buildings' (18.89%) represent the impersonal domain with negative coordinates.

One of the more interesting results emerging from this plot is how densely, but distinctively, the data points are distributed throughout the biplot. Given the two axes, we can easily distinguish four meaningful quadrants based on the correspondence between symbols and themes. The first quadrant (upper-right) brings together spirituality on the one hand and the self on the other. These include symbols and categories exemplifying personal religious expression. The second quadrant (lower right), however, seeks spiritual meaning not in personal expression but in the outside world, with nature and mosques as clear examples of this. The third quadrant (lower left) is dominated by non-spiritual and non-personal symbols and categories, such as culture, music and sports. Finally, the fourth quadrant (upper left) is less distinct when it comes

to coordinates on the X-axis, with none of the categories loading strong on the first dimension (the spiritual) while contributing significantly to the second dimension (the self). Therefore, this quadrant situates itself more in between the non-spiritual and the spiritual realm. This is not surprising given the fact that categories such as relationships and (political) activism are not spiritual as such, but could be incorporated into one's religious beliefs. This suggest that when representing the self on Instagram, distinctions between the spiritual and non-spiritual are less clear-cut.

While the third dimension explains a considerable amount of variance, contributions of rows and columns are non-distinguishable; without clear dominating categories. The fourth dimension, however, is clearly dominated by the opposition between more conservative or even extremist religious expressions and religion as lifestyle. The contribution of categories shows that, for example, praying (24.02%), scholars (19.64%), weaponry (13.91%), and extremism/violence (12.22%) load positively on this dimension and categories such as fashion/appearance (25.64%) and male clothing (5.85%) load negatively and thus denote the 'religion as lifestyle' realm. While it is telling that categories such as scholars and praying are more akin to religious extremism than other more moderate data points, this might be explained by the fact that most of these categories are male-centered and that both traditional religious authority/expression and religious extremism are heavily gendered within our sample.

To conclude, given the distinctive opposition between the spiritual and non-spiritual and the prominence of religion as self-presentation/lifestyle-the , we argue that a more in-depth semantic analysis could complement the research findings . Therefore, we decided to complement our visual analysis with an examination of the prominent hashtags in our corpus.

Semantic examination of hashtags

First, hashtag frequencies were explored in order to look at the structure within the data and whether interrelationships can be found between central terms. For this, we used the full dataset of n=1,357 posts with n=5,190 unique hashtags. As discussed before, a hashtag is a tool for the systematic classification of online content, aiming to establish connections within a broader semantic field. Using the *dplyr* package in *R*, frequencies of all possible combinations of the three main hashtags (*#Islam*, *#Muslim*, and *#Allah*) were obtained. Admittedly, only 17% of all posts

(235/1,357) contained all three hashtags, indicating a sheer diversity of other used hashtags. Before exploring broader relationships, we established the co-occurrence between these main hashtags(See table 7).

#Muslim	#Allah	#Islam	Count	% posts #*Muslim*	% posts #*Allah*	% posts #*Islam*
Yes	**Yes**	**Yes**	235	31.21	37.84	25.11
Yes	No	No	192	*25.50*		
No	**Yes**	No	199		*32.05*	
No	No	**Yes**	248			*26.50*
Yes	**Yes**	No	30	3.98	4.83	
Yes	No	**Yes**	296	39.31		31.62
No	**Yes**	**Yes**	157		25.28	16.77
		Total:	*1,357*	*N= 753 (100%)*	*N= 621 (100%)*	*N= 936 (100%)*

Table 7 Co-occurrences of the three central hashtags within each category (in percentages.)

What we learn from table 7, among others, is that – not surprisingly – these three hashtags are semantically speaking strongly connected with each other. When the *#Muslim* hashtag is used, for example, there are no references to *#Islam* or *#Allah* in only 25.5% of those cases. Or in other words, in about one fourth of the posts containing *#Muslim*, other hashtags than #*Allah* or #*Islam* were used. Similarly, posts containing *#Allah* or *#Islam* without the presence of at least one of the two other hashtags were found in approximately 32,05% (*#Allah*) and 26,50% (*#Islam*) of the cases. That means that in roughly 70% of the cases one of the three core hashtags is coincided with at least one other core hashtag.

A more nuanced reading, however, shows that not all relationships are equally strong. In this regard, it is striking that *#Muslim* and *#Allah* seldom co-occur. If *#Allah* is mentioned in a post, only in 4.83% of those instances *#Muslim* is employed. Contrary to this, 25.28% of posts containing *#Allah* also contain *#Islam*. Apparently, in the users' minds, the interrelationship between 'Allah' and 'Islam' is much stronger than the one between 'Allah' and 'Muslim'. This is potentially a compelling finding, since it may refer to the Islamic idea that a clear distinction exists between human religious experience on the one hand and God and religious doctrine on the other.

In other words, it seems to make more sense to semantically establish connections between religion (*#Islam*) and God (*#Allah*), than between believers (*#Muslim*) and God.

In order to understand the broader semantic field these three core hashtags operate in, a more inclusive exploration of the other 5,190 unique hashtags seems necessary. Besides the hashtags *#Allah*, *#Muslim* and *#Islam*, only a few terms seem fundamentally dominant. Prevalence rates indicate that about 7.5% (n=389) of all other hashtags occur more than five times. Within these, solely nine hashtags occur at least 100 times, which are *#Muslimah*, *#Quran*, *#hijab*, *#Sunnah*, *#Islamic*, *#love*, *#dua*, *#islamicquotes*, and *#Indonesia* (see figure 5).

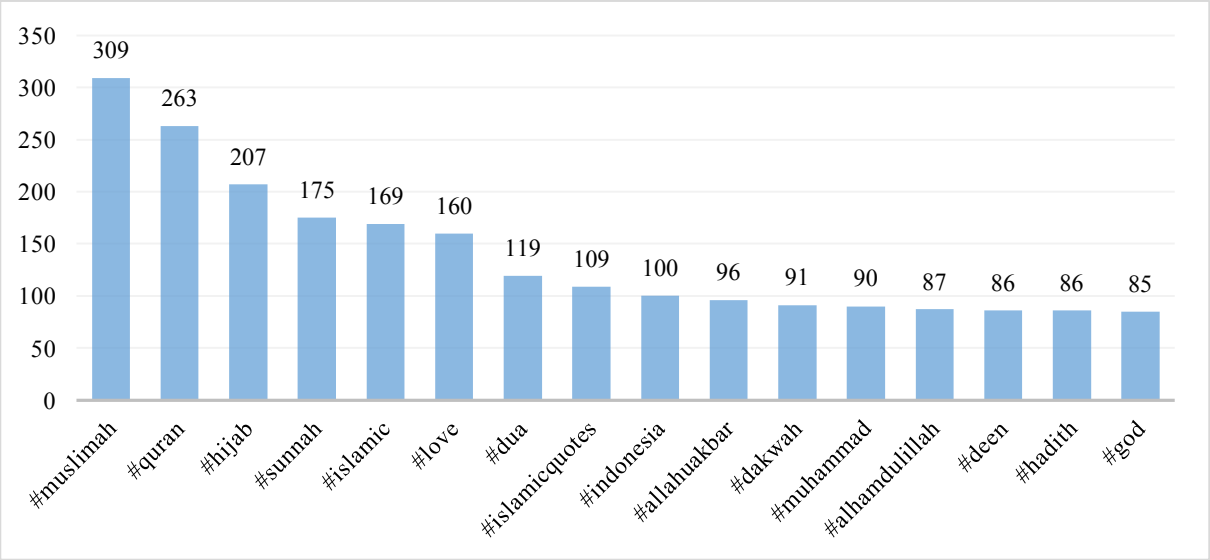


Figure 5: Term frequencies (#Muslim, #Allah, #Islam excluded)

Interestingly, two of top-three most frequently used hashtags do not specifically refer to Islam or religion as such, but rather to elements of Muslim religiosity or lifestyle and/or religious identity. It should be pointed out that this concurs with our findings from the visual analysis. Additionally, it seems to support the finding that, from a linguistic perspective, *#Muslim* and *#Islam* are similar, but different entities. The most frequently appearing hashtag in the total dataset, ignoring *#Muslim*; *#Islam* and *#Allah*, is *#Muslimah*. This may point to a strong female representation in the online visual Muslim culture. With an eye on future research, it might be highly relevant to explore this gender-identity dimension more in detail.

To conclude the semantic hashtag-exploration, we performed a co-occurrence network analysis on the entire corpus. In a co-occurrence network, terms which frequently co-occur in one single post cluster together. These clusters represent 'neighborhoods' of terms, characterized by strong edges

(lines) indicating a high degree of co-occurrence. These neighborhoods represent similar semantic representations (e.g. mouth, ear, nose) indicating a higher-order construct (e.g. facial features). This allows us to detect semantic patterns within the corpus. In order to perform the co-occurrence analysis, we exported the preprocessed corpus in *R* and imported the data in *KH Coder*. In order to represent the most relevant co-occurrences, only terms that occur at least 25 times are included in the analysis. This results in exactly 80 different terms, of which only the 60 most co-occurring terms receive edges (lines) in order to filter out the most irrelevant co-occurrences. For the distance measure, we opted for the *cosine similarity*, which has been proved most accurate in comparison with other distance measure within the context of analyzing hashtags in previous research (Ozdikis, Senkukl & Oguztuzun 2014: 45). The resulting co-occurrence network is visualized in figure 6. Thicker lines represent stronger co-occurrences. It is possible and even expected that terms appear in multiple communities, which is merely an indicator that these terms co-occur with hashtags from different clusters.

We define communities by the random walk criteria as proposed by Pons and Latapy (2006). Different colors indicate significantly different communities and are connected with solid lines. Connections between different communities are by definition less strong than connections within communities and are represented with dotted lines. The resulting communities correspond well with our initial findings from the correspondence analysis, with some clusters being defined by strongly religious hashtags. Especially the community in the middle is purely spiritual and rather general in nature, with hashtags such as #*prophetmuhammad*, #*faith* and #*God*. Two dotted lines connect these hashtags with a neighboring community representing – mostly -- Arabic and rather abstract concepts related to the experience of being Muslim. #*Ummah* (community), #*Sunnah* and #*prayer* are examples of the Islamic creed and what it means to be a Muslim. In turn, this community is connected with the self-presentational community characterized by hashtags such as #*muslimah* and #*hijab*. Interestingly, the #*prayer* community also relates to the experiential community described before with hashtags representing a more concrete and outwardly expression of one's religion. Hashtags such as #*dua* (invocation), #*Mekke* and #*Turkiye* characterize this community. All these terms refer to the presence of Islam in the outside world, in which #*Turkiye* serves as a symbol of a religious nation state and #*Mekke* as – of course – the holiest city within Islam. It should also be pointed out that these hashtags are predominantly Turkish. Therefore, we

should be aware of language as a possible determinant in defining communities. However, as the vast majority of our hashtags is in English, we believe that our analysis is still warranted.

Less prominent communities are categorized by the same spiritual/self-presentation and abstract/concrete dichotomies. What stands out here, is, first, that the expression of spirituality ranges from purely abstract (#*God*, #*faith*) to strictly concrete (#*Mekke,* #*iman*), with abstract Islamic concepts (#*Sunnah*, #*Hadith)* in between these two extremes. This corresponds well with our previous finding that distinctions between spiritual and non-spiritual expressions are less clear-cut when representing one's religious beliefs on Instagram. It also complements our initial distinction between the personal and the impersonal. Second, hashtags such as #*fashion*, #*hijab*, #*muslimah* represent the self-presentational realm previously defined in the correspondence analysis of themes and symbols.

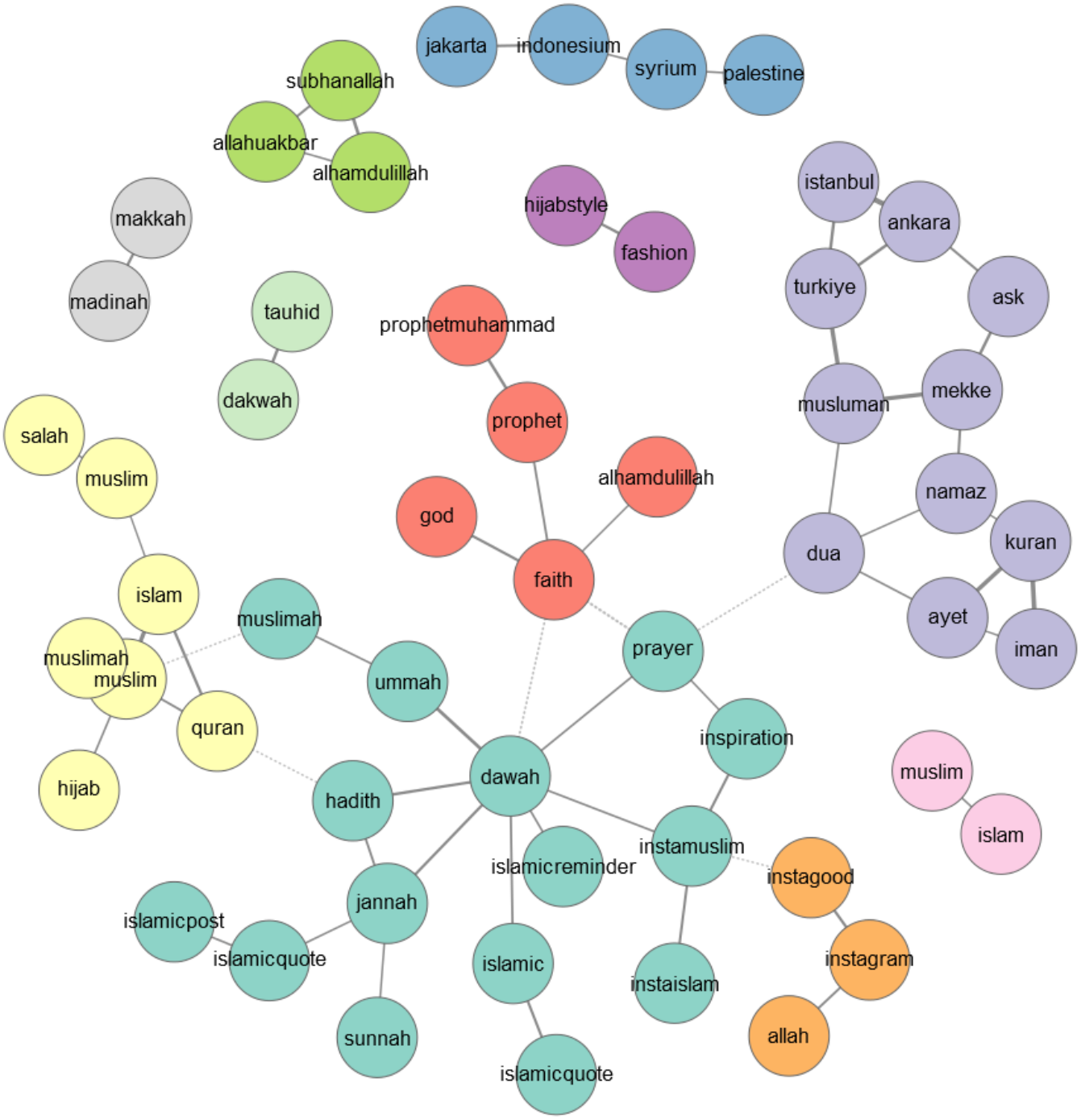


Figure 6: *Co-occurrence network analysis of hashtags*

Concluding remarks

This study set out to investigate (self-)representations of Muslim religiosity and Islam on Instagram. We attempted to do this by means of an innovative multidimensional and quantitative content analysis method, enabling us to study both visual representations as well as semantic associations, using a dataset consisting of 1,357 unique Instagram posts marked with the hashtags *#Islam*, *#Muslim* and *#Allah*. We did this as a direct answer to the call by Ahmed and Matthes (2016) for more systematic analyses of visuals and social media content in the case of media representations of Islam and Muslims. By producing empirical data on Instagram representations of Islam and Muslim religiosity, this study lays a first foundation for a deeper understanding of contemporary Islamic visual culture. Specifically, the findings of this explorative study are threefold.

First, and maybe paradoxically at first sight, within the online visual culture of Muslim representation on Instagram, the most dominant 'visual' appears to be text. In our corpus, inspirational quotes and spiritual messages are paramount. We found that in four out of ten items textual aspects of the post appear to prevail over its visual information. On the one hand, this may raise questions about our assumption that daily life and/or experiences—including religious identity formation—are increasingly visualized (cf. Mirzoeff 1999). On the other hand, in the vast majority of cases, these quotes do not appear against an empty backdrop. Right on the contrary, text is often consciously positioned on a meaningful and suitable graphic background. This suggests that aesthetics are an important feature of this format. Therefore, we argue that the 'visualization of text', i.e. text presented in a visual context, operates as complementary in the online representation of Muslim religiosity. More qualitative research, however, on this 'visualization of text' is desirable.

Second, even though very generic search queries –*#Islam*, *#Muslim* and *#Allah*– were used to compose our corpus, a substantial share of symbols we came across happened to be strongly related to female religious identity. One in four posts featured hijabs, veils and other female religious clothing. This stands in sharp contrast with the scarce presence of imagery of male clothing, that is mainly featured in posts about religion. Moreover, this observation is also mirrored in the semantic analysis of dominant hashtags, in which *#Muslimah* appears to be the most used hashtag and *#hijab* the third. This finding may seem somewhat puzzling at first sight. On the one hand it can be argued that the strong presence of female religious dress points to a hijabista culture as

discussed in our literature review (Kavakci and Kraeplin 2016). On the other, it might be a mere product of Instagram user demographics. Instagram is notoriously more popular among women than among men (Parker 2016).

Also noteworthy is the observed thematic gender distribution of symbols: posts about religion were more likely to feature 'male' symbols, while 'female' symbols were more prevalent in posts about fashion. This implies that Muslim women's self-representation mirrors their traditional underrepresentation in formal, 'public' positions (cf. Poole 2002; Ichau and d'Haenens 2016). On the other hand, by posing as 'stylish' and 'trendy', these women use their Instagram accounts to challenge traditional views of Muslimahs. The gender division was also evident when looking at the corresponding relationship between theme and symbols, with more conservative or even extremist religious expressions (violence) dominated by male symbols (weaponry, scholars) which stood in contrast with female expressions of religion as lifestyle. In that sense, our findings can be seen as indicative of a distinctive type of representation in line with Rocamora's (2011) claim that visual self-representation functions as an act of empowerment. We therefore argue that future research needs to include gender variables in the analysis. Also worthy of further exploration are the visual representations of other religious and philosophical currents.

Third, and maybe most significant, based on our analysis of both visuals and hashtags, we observe a field of tension between the representation of religious outer-appearance and identity on the one hand, and religion itself on the other. Both the visual as well as the semantic analysis point to a dual vision, of a 'personalized', mundane religious experience on the one hand, and a more abstract, spiritual religious experience on the other. It has been argued that religious expressions on social media are where the sacred meets the profane (Cheong *et al.* 2008). This finding also ties back to Kavakci and Kraeplin's (2016) argument that *islamofashionista* culture has given rise to new religious behaviours and experiences that might be in conflict with traditional religious/Islamic values. In that sense, it seems meaningful to refer back to the quote with which we opened this chapter. The individual who posted the quote drew attention to the colliding values between an online visual culture and a broader religious context it refers to, whilst, at the same time, strengthening his/her own personal religious experience as well by expressing his/her religious values through mediated communication. It should be noted that an important limitation of the present study is the narrow focus on Muslim religiosity. iven the global tendency to mediatize personal religious experiences, we strongly encourage future research to look at visual

representations of non-Islamic religiosity and spirituality on the internet, in order to examine whether our findings are robust across religious contexts.

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Appendix: Coding instrument

VAR_1: PHOTO_CODE

Use this formula to assign a unique code to every item:

I01 = Islam01, I02 = Islam02, I03 = Islam03, …

M01 = Muslim01, …

A01 = Allah01, …

VAR_2: DATE of publication

VAR_3: PHOTO_ID

VAR_4: USER ("@ name", not screen name)

VAR_5A: #Likes (number of likes)

VAR 5B: #Comments (number of comments)

VAR_6: IMAGE_TYPE

1. Photograph (excl. selfie)
2. Selfie
3. Illustration / cartoon
4. Graph / chart / table
5. Map
6. Screenshot
7. Quote / Text
8. Video
9. Other / undefinable

VAR_7: TEXT IN IMAGE (not in description!)

0. =no
1. =Yes

VAR_8: (PRESUMED) LANGUAGE

1. English
2. Asia-Pacific (Indonesian / Malaysian)
3. Arabic / Farsi
4. Turkish
5. Russian
6. Other

VAR_9: THEME (of the image, not of the description)

1. Religious
2. Political
3. Military
4. Fashion / outer-appearance
5. Music
6. Sports
7. Popular culture
8. Food
9. Relationships
10. (In)equality / activism
11. Art and architecture
12. Nature
13. History
14. Extremism / Violence (e.g. support khilafah)
15. Advertising
16. Daily life
17. Travel
18. Inappropriate / pornographic content
19. Other/miscellaneous….

VAR 10: SYMBOLS

1. Books/ (religious) texts
2. Male religious clothing
3. Veils/Hijab
4. Other clothing, shoes, accessories, etc.
5. Beards
6. Praying
7. Children
8. Tawhid/pointing finger
9. Scholars/imams
10. Buildings/mosques
11. Allah sign
12. Landscapes /nature
13. Weaponry
14. Other/miscellaneous