RESEARCH LETTER

Dermatological Findings in Children's Films

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ABSTRACT

Introduction: Filmmakers use dermatologic findings to help the audiences decipher between 'good' and 'bad' characters by portraying villains with recognizable skin findings. The objective of this study was to analyze 18 Disney live-action movies in relation to their earlier animated releases to determine whether there were changes or correlation about how the industry portrayed certain characters based on their roles as heroes or villains.
Methods: To better understand how the use of dermatological findings are changing in the film industry, eighteen Disney live-action movies in relation to their earlier animated releases were compared for changes or correlation on how the industry portrays certain characters based on their roles as heroes or villains.
Results: Film antagonists were depicted with significantly more dermatologic findings than protagonists (p<0.0001). In addition, the frequency of periorbital hyperpigmentation (p=0.02) and nasolabial folds (p=0.05) were significantly higher in antagonists versus protagonists.
Discussion: These findings have important implications about the dermatological content of movies directed toward children. Findings of this study suggest filmmakers are continuing to use common dermatological findings to indirectly portray characters as 'good' or 'bad.'

Children use media to learn attitudes and behaviors, developing morals based on media depictions.[1] As their brains develop, children are able to decipher sounds and visual images presented in movies. Symbolic dermatologic depictions are used by the film industry to help audiences distinguish between 'good' and 'bad' characters by portraying villains with recognizable skin findings. Presenting villains with more skin findings than the heroes can serve to create prejudice.[2]

A 2011 study found that media's portrayal of perfection causes psychological problems among females.[3] Castillo noted that Disney presents its princesses in such a manner that is "impossible … for humans to achieve" like Princess Aurora from *Sleeping Beauty*.[4] Having children idolize characters that are not visually and physically attainable can negatively impact the mental health of children as they age.

A 2017 study that analyzed villains from classic movies found that dermatologic findings in villains included alopecia, periorbital hyperpigmentation, androgenic alopecia, deep rhytids, scars, verucca vulgaris, and rhinophyma.[3] A subsequent study analyzed animated films for the use of dermatological findings and found significantly more skin findings in antagonists compared to protagonists. Balding, periorbital darkness, and moles were

Table 1. Dermatological findings by character type and film type.

Dermatological Findings	Hero	Villain	p-value*	Original Film	Remake Film	p-value*	Characters from Original Film	Characters from Remake Film
Rhytides	3	6	0.25	5	4	1.00	Lady Tremaine, Queen of Hearts, Cruella De Vil, Prince Adam (Human Form), Shan Yu	Gaston, Prince Adam (Human Form), Prince Adam (Beast Form), Bori Khan
Nasolabial Folds	2	7	0.05	3	6	0.44	Lady Tremaine, Queen of Hearts, Jafar	Lady Tremaine, Cruella De Vil, Prince Adam (Beast Form), Jafar, Aladdin, Bori Khan
Periorbital Puffiness	0	2	0.31	1	1	1.00	Lady Tremaine	Gaston
Periorbital Hyperpigmentation	0	5	0.02	2	3	1.00	Cruella De Vil, Jafar	Maleficent, Cruella De Vil, Jafar
Poliosis	0	3	0.09	2	1	1.00	Lady Tremaine, Cruella De Vil	Cruella De Vil
Scar	2	1	1.00	0	3	0.23	None	Mowgli, Prince Adam (Beast Form), Bori Khan
Gray-Hued Skin	0	3	0.09	3	0	0.23	Maleficent, Cruella De Vil, Shan Yu	None
Alopecia	0	3	0.09	2	1	1.00	Ringmaster, Shan Yu	Red Queen
Hypopigmented Skin	0	2	0.21	0	2	0.48	None	Red Queen, Maleficent
Hyperpigmented Beauty Mark	0	1	0.47	0	1	1.00	None	Red Queen
Buccula	0	1	0.47	1	0	1.00	Queen of Hearts	None
Total	7	34	0.0001	19	22	0.71	Not Applicable	Not Applicable

*Fisher's exact test was used to determine statistical significance between dermatological findings and film type. T-test was used to compare mean total number of dermatological findings and film type. Chi-square tests and Fisher's exact tests were used to determine associations between dermatological findings and character type. All analyses and data management were performed using SAS statistical software, version 9.4 (SAS Institute Inc., Cary, NC).

Table 2. Dermatological findings by movie release and character type.

Number of Protagonists in Original Movies	9
Number of Protagonists in Remake Movies	9
Number of Antagonists in Original Movies	8
Number of Antagonists in Remake Movies	8
Total Number of Dermatological Findings in Protagonists	7
Total Number of Dermatological Findings in Antagonists	34
Number of Dermatological Findings in Protagonists of Original Film	1
Number of Dermatological Findings in Protagonists of Remake Film	6
Number of Dermatological Findings in Antagonists of Original Film	18
Number of Dermatological Findings in Antagonists of Remake Film	16
Mean (std) of Dermatological Findings in of Protagonists in Original Film	0.11 ± 0.33*
Mean (std) of Dermatological Findings in of Protagonists in Remake Film	0.67 ± 1.09*
p-value Comparing Dermatological Findings in Protagonists in Original Verses Remake Films	0.146*
Mean (std) of Dermatological Findings in of Antagonists in Original Film	2.25 ± 1.49*
Mean (std) of Dermatological Findings in of Antagonists in Remake Film	2.00 ± 1.07*
p-value Comparing Dermatological Findings in Antagonists in Original Verses Remake Films	0.705*

*T-test was used to determine whether there was a difference in the number of dermatological findings in protagonist of original and remake films. In addition, T-test was also used to determine whether there was a difference in the number of dermatological findings in antagonists of original and remake films. All analyses and data management were performed using SAS statistical software, version 9.4 (SAS Institute Inc., Cary, NC).

depicted on antagonists at a significantly higher frequency than protagonists.[5]

The objective of this study was to analyze 18 Disney live-action movies in relation to their earlier animated releases to determine whether there were changes or correlation about how the industry portrays certain characters based on their roles as heroes or villains. Live-action productions of animated films involve actors instead of animated portrayals. Movies analyzed were *Dumbo* (1941)*, Dumbo* (2019)*, Cinderella* (1950)*, Cinderella* (2015)*, Alice in Wonderland* (1951)*, Alice in Wonderland* (2010)*, Sleeping Beauty* (1959)*, Maleficent* (2014)*, 101*

Dalmatians (1961)*, 102 Dalmatians* (2000)*, The Jungle Book* (1967)*, The Jungle Book* (2016)*, Beauty and the Beast* (1991)*, Beauty and the Beast* (2017)*, Aladdin* (1992)*, Aladdin* (2019)*, Mulan* (1998)*, and Mulan* (2020)*.*

The total number of dermatological findings found based on the 18 movies analyzed was 41, of which 7 were identified in protagonists and 34 in antagonists (**Table 1**, $p<0.0001$). Antagonists exhibited higher percentages of all skin findings except for scars. Periorbital hyperpigmentation ($p=0.02$) and nasolabial folds ($p=0.05$) were significantly higher in antagonists. No statistical differences were found between the original and remake films for dermatologic depictions by time of release. However, dermatological findings and character classification were remarkable for an increase for protagonists in the remake films compared to original film versions (**Table 2,** 1 vs. 6).

An important methodological limitation of this study relates to classifying skin findings in characters. Subjectivity is possible when identifying dermatological findings in characters, especially in animated films where at times it is difficult to decipher artist intentions with certainty. To limit and reduce subjectivity, all authors confirmed the findings presented.

This analysis of children's movies indicates that villain depictions include incorporation of skin disease representations that are often absent in heroes. Because many movie villains present with common skin findings, children with similarities may begin to identify with antagonists simply based on film depictions. Dermatological depictions may also stigmatize large groups based on appearance that will inevitably affect many individuals in our communities. Comparing the use of skin depictions in original and remake films suggests that filmmakers continue to use common dermatological findings to portray characters as villains, thereby teaching young viewers that dermatological conditions define the moral character of an individual.

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