

UvA-DARE (Digital Academic Repository)

Youth and entertainment-education

Cole, S.; Piotrowski, J.T.

DO

10.1007/978-3-030-63614-2 17

Publication date 2021

Document VersionFinal published version

Published in Entertainment-Education Behind the Scenes License CC BY-NC-ND

Link to publication

Citation for published version (APA):

Cole, S., & Piotrowski, J. T. (2021). Youth and entertainment-education. In L. B. Frank, & P. Falzone (Eds.), *Entertainment-Education Behind the Scenes: Case Studies for Theory and Practice* (pp. 279–290). Palgrave Macmillan. https://doi.org/10.1007/978-3-030-63614-2_17

General rights

It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

Disclaimer/Complaints regulations

If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: https://uba.uva.nl/en/contact, or a letter to: Library of the University of Amsterdam, Secretariat, Singel 425, 1012 WP Amsterdam, The Netherlands. You will be contacted as soon as possible.

UvA-DARE is a service provided by the library of the University of Amsterdam (https://dare.uva.nl)

Download date:10 Mar 2023



CHAPTER 17

Youth and Entertainment-Education

Sebastián Cole and Jessica Taylor Piotrowski

Readers of this book undoubtedly understand that entertainment can be a particularly potent way of persuading audiences, mostly attributable to entertainment's resistance-reducing characteristics (Slater & Rouner, 2002). With well-studied and prepared narratives and messages, audiences can easily become involved with the story and the characters, and in doing so, are less likely to counter-argue and easier to persuade (Moyer-Gusé, 2008). Since the concept of entertainment-education (EE) formalized in the 1970s with the Latin American soap opera Simplemente María, the uses and applications of EE are also developed. At the time of this writing, EE is practiced in multiple countries, in multiple contexts, with multiple aims following similar design structures. Today's formal EE campaigns focus upon an intended persuasive goal (Moyer-Gusé & Nabi, 2010) and are created with an educational or prosocial behavior in mind; they aim to provide information, influence awareness, knowledge, attitudes, and/or behaviors related to the topic of the message. At its core, EE assumes the creation of a moral framework and value grid that works for the topic and the geographical area where the message will be broadcast; a theory that informs the creation process and the content; and research to develop and test the message, as well as evaluate its success and effect afterward (Singhal

University of Amsterdam, Amsterdam, Netherlands e-mail: s.colepomamurialdo@uva.nl; J.Piotrowski@uva.nl

S. Cole • J. T. Piotrowski (\boxtimes)

& Rogers, 2001). And indeed, well-designed EE campaigns work, as now-classic examples such as *Soul City* in South Africa and *Puntos de Encuentro* in Nicaragua have shown (Lacayo, Obregón, & Singhal, 2008; Rodríguez, 2005; Singhal & Rogers, 2001).

Today, EE has achieved a wide range of results focusing on diverse issues and topics. Since its inception, EE campaigns have aimed to affect attitudes, norms, and behaviors related to many topics, such as domestic violence, homosexuality, and rape, and more recently EE has been highlighted as a tool for health communication interventions for adults (Lacayo et al., 2008; Obregón & Mosquera, 2005; Piotrow & de Fossard, 2004; Storey & Sood, 2013; Tufte, 2005). However, we would argue that while the vast body of literature that has been coined "entertainment-education" has indeed focused on social and behavioral change for adults, there is another body of literature that squarely fits in this space: namely, campaigns for *young audiences* that focus on *cognitive and social-emotional skills*. This chapter aims to overview the main characteristics of this content for young audiences and how they overlap with traditional EE.

EDUCATIONAL MEDIA FOR YOUTH

Despite the common application of EE for adult-focused health and behavioral messages, there is another application that relies on the same principles of EE but many times does not appear in the same literature searches: *educational television for children and adolescents*. Just like EE, educational television programs for youth rely on the theorizing of behavioral change, formative research processes to gain knowledge of the audience and intended concepts, and summative evaluation processes to measure the impact of the messages. However, while adult-focused EE typically aims to raise awareness about diseases or health behaviors, youth media most often focuses on the development of cognitive (e.g., school readiness) and social-emotional (e.g., executive function) skills (Fisch, 2004).

Theorizing of Behavioral Change

Educational television for children differs from adult EE by focusing on cognitive and social-emotional skills, but they do tend to overlap in their theoretical core. The theoretical base in EE, for example, is heavily connected to social-psychological theories of behavior (Orozco-Olvera, Shen,

& Cluver, 2019; Storey & Sood, 2013). Similarly, educational media for children is also largely based on this type of theory (see also Piotrowski, 2018). Social Cognitive Theory (SCT) (Bandura, 2009), for example, proposes that in order to learn a certain behavior, four processes are necessary: attention, retention, reproduction, and motivation. This means that, for educational media for children, the characters and stories must be engaging so that they are motivated to retain and replicate behaviors enacted by the characters. Specifically, viewers engage and identify with characters through diverse cognitive processes, such as parasocial interactions and relationships (Jennings, 2018; Moyer-Gusé, 2008). In this way, children both have conversations and build friendships with on-screen characters that directly talk to them. Research has also shown that children learn more from television when they are more familiar and have a stronger relationship with the characters they are interacting with (Jennings, 2018). Then, if the opportunity is present, the goal is that children will apply the modeled behaviors, which ideally will be reinforced and motivated by their parents. Bandura's theory has been suggested to be the backbone of both EE and children's media (Piotrowski, 2018; Singhal & Rogers, 2001; Storey & Sood, 2013).

However, research on youth media also brings new theories that could benefit E-E. For instance, Fisch's (2000) Capacity Model (CM) (with roots in other information processing theories) is an often-applied theory in the youth media space. Here, the theory is based on the supposition that working memory is limited and—when faced with the choice between processing entertainment and educational content in a narrative—entertainment always wins. This "narrative dominance," however, can be overcome by limiting the distance between the educational and entertainment message. In other words, if a designer can ensure that the content is so inextricably linked that one cannot be processed without the other, then the likelihood for processing and retaining the educational content is greatly increased. Even more, the theory highlights different contextual and content strategies that can help users differentially allocate more of their working memory to the educational lessons. In recent years, there has been a growing body of evidence supporting the use of this theory for effective educational media design. Considering that the limits of memory and cognitive capacities are seldom considered in reviews of EE (Orozco-Olvera et al., 2019; Storey & Sood, 2013), it seems that there is room to consider the opportunities of Capacity Model (or other information processing theories) as we think forward about EE.

Knowledge of the Audience and Intended Concepts Through Formative Research

Beyond understanding the diverse theoretical frameworks regarding behavioral change and media, it is important to have a vast knowledge of the intended audience and the concepts that will be included in the campaign. In other words, successful EE campaigns for both children and adults should extensively use formative research to get to know the current knowledge and context of the audience, as well as test the messages that will be included in the campaign. Fisch and Bernstein (2001) highlight that formative research is necessary in educational shows especially for its practical purposes, and ideally it should be "quick" and "clean."

The now-classic Sesame Street (1969), as well as other shows that followed its steps (Barney & Friends (1992) and Blue's Clues (1996)), has used empirical formative research to design its programs (Anderson et al., 2000; Fisch, Truglio, & Cole, 1999; Singer & Singer, 1998). Sesame Street, for instance, was developed to help support the school readiness skills of at-risk youth by merging educational lessons into an entertaining and engaging format (Fisch & Truglio, 2001). Relying on a practice of bringing together educational experts, media designers, and researchers, the show managed to effectively bridge research and practice, making its content both educational from a scientific standpoint and engaging and fun for its target audience. On the Sesame Street set, for example, formative research and scientific collaboration includes finding out what children already know about a topic, if a specific segment is comprehensible and appealing, and even testing early versions of the show with live audiences. Such research has led to many key aspects of the show, including the inclusion of the show's now-famous Muppets (Fisch & Bernstein, 2001; Truglio, Lovelace, Seguí, & Scheiner, 2001).

Examples of EE for children around the world have shown similar practices. The creators of *Meena* in South East Asia, for example, held consultations with local governments, NGOs, and artists, as well as over 100 focus groups and in-depth interviews with children, parents, and community members over a period of eleven years (McKee, Aghi, Carnegie, & Shahzadi, 2004). It must be noted that this is not only to pretest the content but also to develop the show before its creation. Many of the stories in Meena are based on real cases, and formative research is necessary to make sure that the content and design will be in line with the current knowledge and needs of the target audience. In this way, shows like *Meena*

are not based on the creators' preconceived attitudes and beliefs but based on a collaboration with the target audience that will later consume the final product.

Summative Evaluation

After the period for formative research and field testing is done and the show has aired, it is essential for an EE campaign to test and evaluate the impact of the campaign. *Sesame Street* and other similar children's educational shows rely on empirical tests after their completion to make sure that its goals have been achieved (Fisch & Truglio, 2001; Piotrowski, 2018). These evaluations have demonstrated strong effects on the development of children's academic and social skills (Anderson et al., 2000; Crawley, Anderson, Wilder, Williams, & Santomero, 1999; Fisch et al., 1999; Jennings, Hooker, & Linebarger, 2009; Mares & Pan, 2013; Piotrowski, 2018; Singer & Singer, 1998). For *Sesame Street*, for example, evaluations have shown that viewers of the show spent more time reading and engaging in educational activities, not only as children but also as teens years later (Fisch et al., 1999; Huston, Anderson, Wright, Linebarger, & Schmitt, 2001).

While research with non-American programming is less often peer-reviewed and instead more likely to appear in evaluation reports, data echoes these positive findings. For example, evaluations of *My Village* in Laos (Wridt, 2017) and the aforementioned *Meena* have used interviews, focus groups, field observations, and surveys to show that these shows have a great potential to influence their viewers. Studies by UNICEF that evaluated *Meena* have shown that children and adults like the characters and the stories, and that the show has a positive effect on children, shifting their attitude and behaviors, making them more expressive, imaginative, spontaneous, and fair (McKee et al., 2004; UNICEF, 2020). This reflects how these educational programs can be used not only for their intended educational purposes but also for a wider EE related goal, to encourage social change.

Moving from Traditional Media to New Media

Since the emergence of *Sesame Street*, there have been numerous examples of television programs designed to support cognitive and social development of youth. But today, *it's not just broadcast media*. The digital

revolution brought new ways to gratify media-related needs and to experience EE, by enhancing, for instance, interactivity and social connection (Lutkenhaus, Jansz, & Bouman, 2019; Wang & Singhal, 2009). And, considering that young children are often the quickest adopters of new technology, it makes sense that media developers are already jumping on the new media train when it comes to educational media. For example, educational apps and games have gained significant popularity among young children, proving to be engaging, appealing, and educationally effective (Dore et al., 2019; Li, 2018; Piotrowski & Meester, 2018). Similarly, augmented reality apps have also been tested as a way to teach the possible effects of climate change to ninth-grade students (Smørdal, Liestøl, & Erstad, 2016). At the same time, we have seen numerous applications for gaming—including the development of a game to teach children to live with diabetes and bring attention to issues such as immigration and global warming (Singhal & Rogers, 2002; Wang & Singhal, 2009).

Looking ahead, one of the potentially most powerful spaces for the future of EE may be teens and social media. Undoubtedly, narrative is powerful—this is clear from the numerous examples in this chapter and other chapters in the book. But social media, when used well, can augment this power. How? Consider, for example, that over half of teenagers in the USA consider themselves to be content creators (Wang & Singhal, 2009). Now consider the fact that other research has suggested that participatory culture that creates a space for sharing and participating can heighten the intended effects of EE (Lutkenhaus et al., 2019; Wang & Singhal, 2009). Merge this together. There is a clear potential for teens to play a key role in the spreading of EE messages in which the changing media landscape brings a new boost to the mouth-to-mouth element of storytelling (Lutkenhaus et al., 2019).

In other words, while the power of the engaging story will always be central in EE, relying on social media to reach teens can help ensure spreadable EE messages. For example, even with low levels of storytelling, HIV-related tweets by young males have been related to higher levels of prevention in certain geographical areas (Stevens et al., 2020). At the same time, we see an increasing number of campaigns that are actively trying to support educational or prosocial change for teens via social media. For example, the STD/AIDS Foundation in the Netherlands (SAFN) collaborated with social influencers to reach out to online beauty and fashion communities and created a series of YouTube videos with the experiences of the members of these communities (Lutkenhaus et al., 2019) in order

to encourage audiences to spread SAFN's message and their own versions of the message. And, closer to more traditionally styled EE soap operas, the web series *Victor and Erika* was created for hard-to-reach Latino audiences in Maryland, USA (Andrade et al., 2015). Using focus groups as formative research, the web series was created with a group of teens and focused on health-related risk behaviors. Therefore, not only were teens the audience of the web series, but they were also actively involved in its production. Taken together, the literature suggests a unique opportunity to use new media as part of EE to increase the reach and the effect of campaigns.

LESSONS LEARNED AND BEST PRACTICES

Youth media has been part of EE all along, although sometimes with a different name. EE campaigns are most often known for their efforts to affect social and behavioral change, particularly in the health sector with adults (Piotrow & de Fossard, 2004; Storey & Sood, 2013; Tufte, 2005). And while there are exceptions to this, campaigns that focus on cognitive and emotional skills which target younger audiences are not often the first content one considers when reflecting on EE. However, educational content for children and t(w)eens not only follows similar guidelines and principles as EE, but has also proven to be as successful as educational campaigns for adults. This highlights an easy opportunity for the future of EE: closing the gap between these two fields in order to strengthen the empirical space of each. Moreover, we would argue there is room for practitioners and researchers to explore areas that they might not have considered before. For instance, the methods used for formative and summative research are mostly the same for EE and youth educational media, but the theoretical backgrounds sometimes differ. While the base theories are similar, the clearest difference is the use of information processing theories that seems more consistently present in work with children. In particular, the Capacity Model was designed for television content for children, but might provide valuable insights to adult-focused EE content as well.

Furthermore, as the amount of digital EE for youth grows, its future potential is revealed. While digital campaigns seemed to lack a clear EE structure, new digital campaigns for youth have shown that it is possible to bring the existing EE knowledge to the digital realm (Bouman, 2021). Youth are quickly becoming the distributors of the very messages that target them—particularly in their tween and teen years. While the use of

formative and summative processes in this space seems less present, there is room to work on this in future projects. At the same time, digital EE outside of the youth space is also varied in its use and popularity. It may be here—the bridging of digital media and EE—where the related fields of youth media and EE can find a powerful meeting ground. With youth quickly responding to digital content, they are a clear target audience for such outreach. If this can be augmented with best practices in EE campaign design and execution, whereby interdisciplinary theories across fields are used in conjunction with formative and summative processes, the potential for meaningful effects seems an achievable and meaningful goal. We look forward to witnessing the next generation of EE unfold, and hope to see the power of young voices in this process.

REFERENCES

- Anderson, D. R., Bryant, J., Wilder, A., Santomero, A., Williams, M., & Crawley,
 A. M. (2000). Researching Blue's Clues: Viewing behavior and impact.
 Media Psychology, 2(2), 179–194. https://doi.org/10.1207/ S1532785XMEP0202 4
- Andrade, E. L., Evans, W. D., Edberg, M. C., Cleary, S. D., Villalba, R., & Batista, I. C. (2015). Victor and Erika Webnovela: An innovative generation @ audience engagement strategy for prevention. *Journal of Health Communication*, 20(12), 1465–1472. https://doi.org/10.1080/10810730.2015.1018648
- Bandura, A. (2009). Social cognitive theory of mass communication. In J. Bryant & M. B. Oliver (Eds.), *Media effects: Advances in theory and research* (pp. 94–124). Routledge.
- Bouman, M. (2021). A strange kind of marriage: The challenging journey of entertainment-education collaboration. In L. B. Frank & P. Falzone (Eds.), *Entertainment-education behind the scenes: Case studies for theory and practice*. Palgrave Macmillan.
- Crawley, A. M., Anderson, D. R., Wilder, A., Williams, M., & Santomero, A. (1999). Effects of repeated exposures to a single episode of the television program Blue's clues on the viewing behaviors and comprehension of preschool children. *Journal of Educational Psychology*, 91(4), 630–637.
- Dore, R. A., Shirilla, M., Hopkins, E., Collins, M., Scott, M., Schatz, J., et al. (2019). Education in the app store: Using a mobile game to support U.S. preschoolers' vocabulary learning. *Journal of Children and Media*, *13*(4), 452–471. https://doi.org/10.1080/17482798.2019.1650788
- Fisch, S. M. (2000). A capacity model of children's comprehension of educational content on television. *Media Psychology*, 2(1), 63–91. https://doi.org/10.1207/S1532785XMEP0201_4

- Fisch, S. M. (2004). Children's learning from educational television: Sesame Street and beyond. Lawrence Erlbaum.
- Fisch, S. M., & Bernstein, L. (2001). Formative research revealed: Methodological and process issues in formative research. In S. M. Fisch & R. T. Truglio (Eds.), "G" is for growing: Thirty years of research on children and Sesame Street (pp. 39–60). Erlbaum.
- Fisch, S. M., & Truglio, R. T. (Eds.). (2001). "G" is for growing: Thirty years of research on children and *Sesame Street*. Erlbaum.
- Fisch, S. M., Truglio, R. T., & Cole, C. F. (1999). The impact of *Sesame Street* on preschool children: A review and synthesis of 30 years' research. *Media Psychology*, 1(2), 165–190. https://doi.org/10.1207/s1532785xmep0102_5
- Huston, A. C., Anderson, D. R., Wright, J. C., Linebarger, D. L., & Schmitt,
 K. L. (2001). Sesame Street viewers as adolescents: The recontact study. In
 S. M. Fisch & R. T. Truglio (Eds.), "G" is for growing: Thirty years of research on children and Sesame Street (pp. 131–143). Erlbaum.
- Jennings, N. A. (2018). Why do kids think Dora the explorer is their friend? In N. A. Jennings & S. R. Mazzarella (Eds.), 20 questions about youth and media. Revised Edition (pp. 125–135). Peter Lang Publishing, Inc.
- Jennings, N. A., Hooker, S. D., & Linebarger, D. L. (2009). Educational television as mediated literacy environments for preschoolers. *Learning, Media and Technology*, 34(3), 229–242. https://doi.org/10.1080/17439880903141513
- Lacayo, V., Obregón, R., & Singhal, A. (2008). Approaching social change as a complex problem in a world that treats it as a complicated one: The case of Puntos de Encuentro, Nicaragua. *Investigación & Desarrollo*, 16(2), 126–159.
- Li, X. (2018). Design and application of children's entertainment education software in preschool education. *International Journal of Emerging Technologies in Learning (IJET)*, 13(07), 201. https://doi.org/10.3991/ijet.v13i07.8809
- Lutkenhaus, R. O., Jansz, J., & Bouman, M. P. A. (2019). Toward spreadable entertainment-education: Leveraging social influence in online networks. Health Promotion International, 1–10. https://doi.org/10.1093/heapro/daz104
- Mares, M.-L., & Pan, Z. (2013). Effects of *Sesame Street*: A meta-analysis of children's learning in 15 countries. *Journal of Applied Developmental Psychology*, 34(3), 140–151. https://doi.org/10.1016/j.appdev.2013.01.001
- McKee, N., Aghi, M., Carnegie, R., & Shahzadi, N. (2004). Cartoons and comic books for changing social norms: Meena, the South Asian girl. In A. Singhal, M. J. Cody, E. M. Rogers, & M. Sabido (Eds.), *Entertainment-education and social change: History, research, and practice* (pp. 331–349). Mahwah, NJ: Lawrence Erlbaum Associates.
- Moyer-Gusé, E. (2008). Toward a theory of entertainment persuasion: Explaining the persuasive effects of entertainment-education messages. *Communication Theory*, 18(3),407–425.https://doi.org/10.1111/j.1468-2885.2008.00328.x

- Moyer-Gusé, E., & Nabi, R. L. (2010). Explaining the effects of narrative in an entertainment television program: Overcoming resistance to persuasion. *Human Communication Research*, 36(1), 26–52. https://doi.org/10.1111/j.1468-2958.2009.01367.x
- Obregón, R., & Mosquera, M. (2005). Participatory and cultural challenges for research and practice in health communication. In O. Hemer & T. Tufte (Eds.), *Media & glocal change: Rethinking communication for development* (pp. 233–246). Publicaciones Cooperativas.
- Orozco-Olvera, V., Shen, F., & Cluver, L. (2019). The effectiveness of using entertainment education narratives to promote safer sexual behaviors of youth: A meta-analysis, 1985–2017. *PLoS One*, 14(2), e0209969. https://doi.org/10.1371/journal.pone.0209969
- Piotrow, P. T., & de Fossard, E. (2004). Entertainment-education as a public health intervention. In A. Singhal, M. J. Cody, E. M. Rogers, & M. Sabido (Eds.), *Entertainment-education and social change: History, research, and practice* (pp. 39–60). Lawrence Erlbaum Associates.
- Piotrowski, J. T. (2018). Is educational media an oxymoron? In N. A. Jennings & S. R. Mazzarella (Eds.), 20 questions about youth and media. Revised Edition (pp. 149–160). Peter Lang Publishing, Inc.
- Piotrowski, J. T., & Meester, L. (2018). Can apps support creativity in middle childhood? *Computers in Human Behavior*, 85, 23–33. https://doi.org/10.1016/j.chb.2018.03.030
- Rodríguez, C. (2005). From the Sandinista revolution to telenovelas: The case of Puntos de Encuentro. In O. Hemer & T. Tufte (Eds.), *Media & glocal change: Rethinking communication for development* (pp. 367–384). Publicaciones Cooperativas.
- Singer, J., & Singer, D. (1998). Barney & Friends as entertainment and education: Evaluating the quality and effectiveness of a television series for preschool children. In J. Asamen & G. Berry (Eds.), *Research paradigms, television, and social behavior* (pp. 305–367). https://doi.org/10.4135/9781483328201.n11
- Singhal, A., & Rogers, E. M. (2001). The entertainment-education strategy in communication campaigns. In R. E. Rice & C. Atkins (Eds.), *Public communication campaigns* (3rd ed., pp. 343–356). https://doi.org/10.4135/9781452233260.n28
- Singhal, A., & Rogers, E. M. (2002). A theoretical agenda for entertainment-education. *Communication Theory*, 12(2), 117–135. https://doi.org/10.1111/j.1468-2885.2002.tb00262.x
- Slater, M. D., & Rouner, D. (2002). Entertainment-education and elaboration likelihood: Understanding the processing of narrative persuasion. *Communication Theory*, 12(2), 173–191. https://doi.org/10.1111/j.1468-2885.2002.tb00265.x

- Smørdal, O., Liestøl, G., & Erstad, O. (2016). Exploring situated knowledge building using mobile augmented reality. Qwerty—Open and Interdisciplinary Journal of Technology, Culture and Education, 1(1), 26–43.
- Stevens, R., Bonett, S., Bannon, J., Chittamuru, D., Slaff, B., Browne, S. K., et al. (2020). Association between HIV-related tweets and HIV incidence in the United States: Infodemiology study. *Journal of Medical Internet Research*, 22(6), e17196. https://doi.org/10.2196/17196
- Storey, D., & Sood, S. (2013). Increasing equity, affirming the power of narrative and expanding dialogue: The evolution of entertainment education over two decades. *Critical Arts*, 27(1), 9–35. https://doi.org/10.1080/0256004 6.2013.767015
- Truglio, R. T., Lovelace, V. O., Seguí, I., & Scheiner, S. (2001). The varied role of formative research: Case studies from 30 years. In S. M. Fisch & R. T. Truglio (Eds.), "G" is for growing: Thirty years of research on children and Sesame Street (pp. 61–79). Erlbaum.
- Tufte, T. (2005). Entertainment-education in development communication: Between marketing behaviours and empowering people. In O. Hemer & T. Tufte (Eds.), *Media & glocal change: Rethinking communication for development* (pp. 159–174). Publicaciones Cooperativas.
- UNICEF. (2020). UNICEF Bangladesh formative evaluation of Meena communication initiative 2019. UNICEF SPEAR Section.
- Wang, H., & Singhal, A. (2009). Entertainment-education through digital games. In U. Ritterfield, M. J. Cody, & P. Vorderer (Eds.), Serious games: Mechanisms and effects (pp. 271–292). Routledge.
- Wridt, P. (2017). My village (ECD TV) programme evaluation report (pp. 1–48). Unicef Lao PDR. Retrieved from https://www.unicef.org/laos/media/296/file/UNICEF%20Lao%20PDR.pdf

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License (http://creativecommons.org/licenses/by-nc-nd/4.0/), which permits any noncommercial use, sharing, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence and indicate if you modified the licensed material. You do not have permission under this licence to share adapted material derived from this chapter or parts of it.

The images or other third party material in this chapter are included in the chapter's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

