

Predicting the next few year academic underachievement in high school in Spain: A dynamical modelling approach*

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Abstract

In this paper we propose a dynamic model to study the evolution of the academic underachievement in the final stage of Spanish high school called *Bachillerato*. To address this problem, we assume that academic underachievement is a socially transmitted behavior [1, 2], that is, we treat school failure as a problem that spreads through social contact. These social contacts have an influence on the probability of transmission of bad studying habits. The main idea behind this approach is that these inappropriate habits may spread from one student to another. These facts lead us to propose an epidemiological-type mathematical model to study the evolution (transmission dynamics) of the academic underachievement in *Bachillerato*. We focus our attention on this educational stage for several reasons. Firstly, from a mathematical standpoint, *Bachillerato* has a simpler academical structure, so it seems to be an appropriate starting point to deal with more complex models in the forthcoming future. Secondly, from a social viewpoint, when students finish *Bachillerato*, they can decide

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whether continue their higher studies or access the work market. This is of paramount importance for society since the percentage of academic underachievement in this level is becoming alarming over the last decades. This constitutes a serious problem not only for these individuals and their families but also for the society that has invested an important amount of money in their previous training.

References

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